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THE BUFFALO CONVENTION OF FOUNDRYMEN, SEPTEMBER 23-27, 1912

A BRIEF ACCOUNT OF THE MEETINGS OF THE ALLIED FOUNDRYMEN'S ASSOCIATION IN CONNECTION WITH THE SEVENTH ANNUAL EXHIBIT OF THE FOUNDRY AND MACHINE EXHIBITION COMPANY HELD AT BUFFALO, NEW YORK.

The afternoon of Friday, September 27, 1912, saw the close at the Broadway Arsenal of another successful exhibition of the Foundry and Machine Exhibition Company. This company, incorporated only two years ago from the Foundry and Manufacturers Supply Association, has now held its seventh meeting. The exhibition just finished was no exception to the standard set by previous ones and came up fully to all expectations. The number of exhibitors as shown by the official program was 107 as against 110 for 1912 at Pittsburgh. The attendance during the week of September 23-27, while the exhibition was in progress, was upwards of eight thousand, including registered guests and local visitors. THE METAL INDUSTRY of September gave a complete account of the plans made to make this gigantic undertaking a success, and it is only necessary to say here that these plans were carefully carried out with the most satisfactory results. A complete list of the exhibitors, what they exhibited and what they think of the results obtained is given at the end of this article in this issue. The officers and directors of the Foundry and Machine exhibition Company for this year are as follows:

SOME OF THE NECESSARY ADJUNCTS OF THE CONVENTION.

OFFICERS.—H. R. Atwater, President The Osborn Manufacturing Company, Cleveland, O.; R. S. Buch, Vice-President A. Buch's Sons Company, Elizabethtown, Pa; J. S. McCormick, Treasurer J. S. McCormick Company, Pittsburgh, Pa.; C. E. Hoyt, Secretary Lewis Institute, Chicago, Ill.

DIRECTORS.—Wilfred Lewis, The Tabor Manufacturing Company, Philadelphia, Pa; H. R. Atwater, The Osborn Manufacturing Company, Cleveland, O.; F. N. Perkins, Arcade Manufacturing Company, Freeport, Ill.; E. H. Mumford, Mumford Molding Machine Company, New York City, N. Y.; A. M. Frauenheim, Herman Pneumatic Machine Company, Zelienople, Pa.; R. S. Buch, A. Buch's Sons Company, Elizabethtown, Pa.; Edward A. Pridmore, International Molding Machine Company, Chicago, Ill.; J. W. Campbell, The Cleveland Wire Spring Company, Cleveland, O.; Henry A. Pridmore, Henry E. Pridmore, Chicago, Ill.

THE ASSOCIATIONS.

The associations which held this convention at the same time with the exhibition were as follows: The American Foundrymen's Association, which held its seventeenth meeting; the American Institute of Metals, formerly the American Brass Founders' Association, which met for the seventh time, and the Associated Foundry Foremen. Contrary to expectations, the attendance at these conventions was larger this year than before, and the change of date from June to September seemed to meet with approval everywhere.

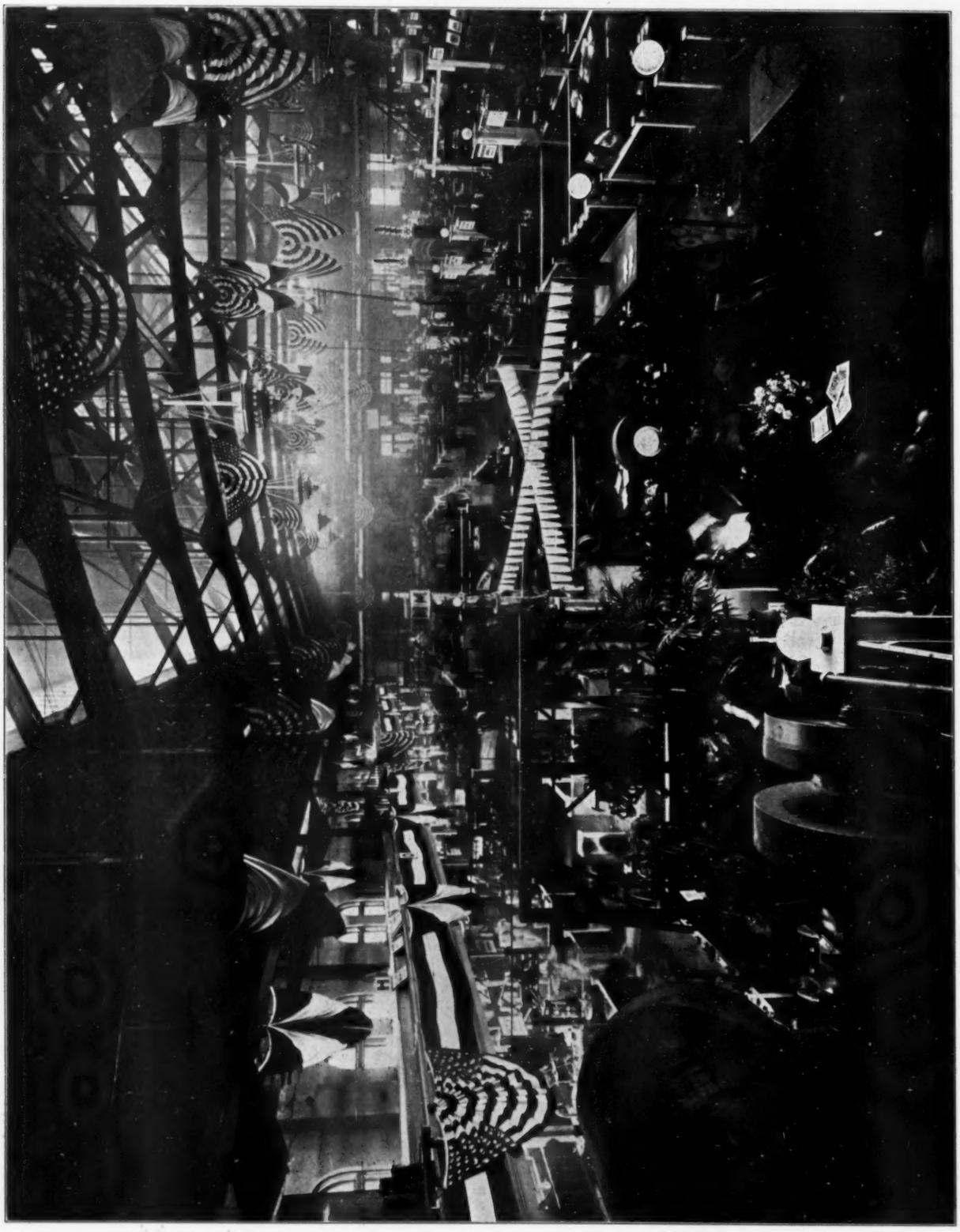
THE SESSIONS.

The first session of the convention was a joint one and was held Tuesday morning, September 24, in the banquet hall of Hotel Statler, with Major Joseph T. Speer, of the Pittsburgh Valve Foundry and Construction Company, president of the American Foundrymen's Association, presiding. Addresses of welcome were delivered by Mayor Fuhrmann and by President Orson E. Yeager and Frank W. Tracy, of the Chamber of Commerce. The responses were by A. E. Howell, of Nashville, Tenn., vice-president of the Foundrymen's Association, and H. D. Miles, chairman of the local general committee. At the close of the speeches the session was devoted to the work of the American Foundrymen's Association, the other two associations holding their own sessions in separate meeting rooms. The American Institute of Metals met at their headquarters, the Iroquois Hotel, and the Associated Foundry Foremen at the Hotel Broezel. The manner of conducting these meetings was a decided improvement over previous years, and the various association officers are to be heartily congratulated upon the success of their efforts to keep the interest up to concert pitch.

AMERICAN INSTITUTE OF METALS.

The first session of the American Institute of Metals was held on Tuesday, September 24, at 2 p. m., in the Iroquois Hotel. Some very interesting discussion developed during the reading of official chemist Arthur Little's report. This report was written by Carl F. Woods, secretary, and covers the progress, made during the year, in the field that the American Institute of Metals covers and devotes its energies to—the development of the metal industry. The report opened with a reference to the exhibition of metals held in London in June of this year.[1] Dr.

[1] THE METAL INDUSTRY, August, 1912.



GENERAL VIEW OF FOUNDRYMEN'S EXHIBITION HELD AT BROADWAY ARSENAL, BUFFALO, NEW YORK, SEPTEMBER 23-27, 1912.

Woods expressed the hope "that this presentation will result not only in a wider and fuller appreciation of the subject, but that it will tend to stimulate research and development along these lines. It is to be further hoped, however, that a repetition of this exhibition will be held, and held in the United States. The metal business has grown to such an important industry and plays such a wonderful part in every-day life and in the progress of this country as a whole that the so-called non-ferrous metal industry can now stand alone and engage the respectful attention of the world."

A reference to "Voltite,"[2] the invention of Arthur T. Firth, of New Zealand, which is just being introduced into the United States, attracted a good deal of attention, but no discussion, as the majority of the members were not familiar with the material. "Voltite," it may be explained, is a method for the electro-plating of one metal on another by frictional precipitation. The "Voltite" process is electrolytic like other electro-plating operations, but very much simplified, and it is claimed for the invention that anyone of ordinary intelligence can operate the process successfully. The compound itself, water and the slight friction used in applying it form a voltaic action, the metallic powder forming the anode and the article on which it is to be deposited the cathode; hydrogen is developed which reduces the salt to a metallic state upon the article itself. The operation is applicable to gold, silver, nickel, copper, tin and brass, and one of the most interesting applications is that of silver direct to steel. Perhaps the biggest field for its application lies in household use. The constant cleaning of silverware results in the removal of the deposited metal, whereas the use of "Voltite" is claimed to increase the thickness of the metal instead of decreasing it and at the same time to preserve the desired appearance of the article.

The new process for the production of colors by electro-deposition, invented by F. Arquimedas Rojas,[3] came in for a good deal of attention. The discussion on the process was started by Dr. H. W. Gillet, of United States Bureau of Mines, who gave a talk on the use of chromium as a coloring agent. He stated that while the immediate results were all that could be desired as to beautiful colors the ultimate results were very unsatisfactory owing to the fact that the colors would not hold. The exposure to atmosphere caused tarnishing and the colors faded. He said that numerous attempts had been made to discover a lacquer which would hold the colors, but so far none had been found that did not have chemical action on the metal. A member told of experiments involving the use of molybdenum, but the final results were not lasting. He also stated that he believed a solution of copper sulphate with a small amount of potassium bichromate in it would give some very excellent color effects, but he did not know how they would endure atmospheric exposure.

The reference in Dr. Woods' report to the Ronay process of briquetting brass, bronze and other metal chips, aroused some talk. The experience of the members in the use of these briquettes was variable. One member in particular claimed to have used some of the Ronay product and stated that the briquettes had been made with a binder and were therefore unsuitable to the member's purpose. As soon as the briquette got heated the binder was destroyed and the material fell to pieces and the result was a loss in melting. The consensus of opinion regarding the matter showed that there is a very good market for a machine or a process for handling material that is in a finely divided condition such as brass, bronze and other metal chips, turnings, sawdust, filings, etc., and all sorts of fuel in powdered form, flue dust and the fine metallic particles recovered in a metal recovery plant. Dr. Woods says of the process mentioned above:

"The Ronay process promises to become very valuable to the non-ferrous industries, owing to the fact that the melting of brass chips or filings has been accompanied by great wastes owing to the large surface of metal exposed to oxidation. As the briquettes formed by this process are practically solid they may be treated much the same as in melting solid metal. At the present time metal made from aluminum chips is of very poor quality, whereas treatment by this process would appear to offer a very successful commercial method for utilizing the waste. On account of the large amount of power required to operate such a plant the process is not applicable to small foundries, but would appear to be commercially feasible for large establishments and particularly for operation by a separate concern for the refining of metal chips from small plants."

The official chemist's report continued with description of "Canadium,"[4] a new metal found in British Columbia, that was composed of platinum and other rare metals. In this connection the statement was made that a new white metal, now being successfully made by a concern in Connecticut, is destined to supplant German silver for some special uses, such as automobile lamps, robe rods, etc., in automobiles. This metal is said to contain 50 per cent. copper, 35 per cent. zinc, 15 per cent. nickel and 2 oz. of aluminum to each 100 lb. of metal. The Pierce-Arrow Motor Car Company is using this metal, which it silver plates, and it is putting in a silver-plating outfit in its automobile works in Buffalo, intending in the future to furnish its cars with silver-plated parts that are now furnished largely in brass.

A hot galvanizing process, invented by Dr. C. F. Burgess, that differs from other previous processes in that it covers the use of an alloy of zinc and iron for coating iron or steel, is described as follows:

"For coating iron or steel. The alloy is composed of about 92 per cent. of zinc and 8 per cent. of iron, and is prepared in a powdered or granulated form. The alloy is applied to the iron and steel in a similar manner to the well-known process of sherardizing. It is claimed by the inventor that the finished coat is dense and silver white in color and electro-positive to iron, but less so than pure zinc, with the result that it does not corrode as rapidly as zinc and yet at the same time protects the iron or steel equally well."

The report further said:

"A very interesting paper was presented by Albert Sang* before the American Electro Chemical Society during the past year on the galvanizing of wire in zinc dust. He describes the different behavior of iron treated at the so-called sherardizing temperatures; that is, below 420 deg. C., and one heated at a very much higher temperature, and builds up certain ingenious theories of the cause.

"A recent British patent covers the addition of small amounts of calcium and molybdenum to copper instead of aluminum and magnesium which it is customary in England to use for the production of extra hard trolley wire. It is interesting to note in this connection that the manufacture and use of alloy wire in this country for trolley wire is rapidly increasing and that recently certain manufacturers have been producing new alloys for this purpose which have not previously been so utilized."

During the reading and discussion of the report the question was asked by a member as to the best method of melting aluminum and some various opinions were given. There seemed to be as many members who had had good success in melting aluminum in an iron pot as there were who used the crucible. Dr. H. W. Gillet stated that he believed an iron pot made of soft iron high in combined carbon, if properly scraped and kept clean, would give better results than a crucible. He warned users of pots against touching the bottom and sides of pot with the ladle when dipping out the metal. He said the best way to melt aluminum was to use an iron

[2] THE METAL INDUSTRY, July, 1911; February, 1912.
[3] THE METAL INDUSTRY, November and December, 1911.
[4] THE METAL INDUSTRY, December, 1911.
[5] THE METAL INDUSTRY, March, 1912.
[6] THE METAL INDUSTRY, October, 1911.

pot heated by oil or gas. This fuel, he said, was better controlled and consequently the temperature of the metal could be more easily regulated.

Following the reading and discussion of the chemist's report came the reading by title of the paper by G. Shaw Scott, secretary of the Institute of Metals of Great Britain. This paper was entitled "History and Achievements of the Institute of Metals of Great Britain." The next paper taken up was that of Prof. C. L. Parsons, mineral chemist, on "Work of the Bureau of Mines as It Relates to the Non-ferrous Metal industry." Dr. Parsons outlined the work that the Bureau hoped to accomplish and stated that Dr. H. W. Gillet, formerly in charge of the research department of the Aluminum Castings Company, had been secured by the Government and would be actively engaged in the investigation of vital foundry questions. The work as at present projected to take up the attention of the Bureau is represented by the following problems: (1) Development of a useful pyrometer; (2) comparative tests of different types of furnaces under comparable conditions with a view to future efficiency and the prevention of wastes; (3) study of commercial alloys with a view to obtaining the desired physical properties in the most economical way; (4) study of health conditions.

NEW OFFICIALS OF FOUNDRYMEN'S ASSOCIATIONS.

RICHARD MOLDENKE,
Secretary-Treasurer of American Foundrymen's Association.

H. D. MILES,
Buffalo Foundry and Machine Company.
Chairman of General Committee and the new President of the American Foundrymen's Association.

ROBERT B. THOMSON,
Buffalo Pitts Company.
Secretary of Buffalo Foundry Foremen's Association and Secretary-Treasurer of the Associated Foundry Foremen's Association.

SESSION ON WEDNESDAY, SEPTEMBER 25.

The morning session was opened at 9:45 with a discussion of the questions outlined by Prof. Parsons on the afternoon before as given above. These questions were taken up in regular order and considerable talk was indulged in relating to pyrometers. The gist of the matter was that the question resolved itself into the item of cost, and the following points were evolved: (1) What it is worth to the average brass foundry for a reading, and the specific figures 10 and 20 cents per 100 readings were mentioned: (2) the cost of upkeep and repair. The matter of initial installation did not seem to be so important, but it was important to get an efficient and reliable pyrometer that would be economical in operation and repair. One member, a representative of a pyrometer manufacturing house, remarked that his firm found it difficult to get in touch with the brass founder and find out just what was required. Members were finally requested by the Bureau officials to send in any data that might be available regarding the use of pyrometers and to ask any questions. Dr. Gillet will have charge of this work, and his address is H. W. Gillet, Bureau of Mines, Ithaca, N. Y.

The second problem, that of various types of furnaces, brought out some interesting facts in relation to present practice using all sorts and conditions of furnaces. Dr. Gillet some time ago had asked for information covering every-day furnace practice. There were 27 questions to which answers were desired. The questions were sent to members through the medium of the June bulletin of the American Institute of Metals. The answers received by Dr. Gillet showed a melting loss of from ½ of one per cent. up to over 20 per cent. All kinds of fuel was used and all types of furnace. It is the purpose of the Bureau to carry on exhaustive tests and finally the results will be tabulated and published, and will show the recommendations of the Bureau as to the best practice. No names of furnaces will be used and the data will be so arranged as to make it extremely difficult for any one to identify any particular make of furnace. The above statement was made by Prof. Parsons in reply to a remark by a member that the results of the investigation might be used by the manufacturer whose furnace more nearly fulfiled the Bureau's conditions, as an advertisement to the detriment of other manufacturers. The last two problems were taken up and Prof. Parsons gave an interesting talk upon the damages to health in the metal melting shop* and sanitary conditions for the workman in general. Following this talk several members told of the

* An interesting editorial was published on this subject in THE METAL INDUSTRY, May, 1910.

care taken of the workers' health by the large concerns which they represented. It seems in some shops the workman has all the devices for comfort of the rich man, with the exception, perhaps, of the couch for the noonday nap. Members were requested to correspond with the Bureau of Mines. The following papers were then read and lightly discussed: "The Electric Furnace for Melting Non-Ferrous Metals," by G. H. Clamer and Dr. Carl Hering, read by Dr. Hering; "The Electric Melting of Brass and Copper," by C. A. Hansen, with a discussion by G. H. Clamer, read by Dr. Hering, and "The Vaporization of Metals," by Dr. J. W. Richards, read by Secretary Corse. This paper is published in this issue of THE METAL INDUSTRY.

THE SECRETARY'S REPORT.

The report of Secretary-Treasurer Wm. Corse was then read and accepted, after which the meeting adjourned. The report was as follows:

The number of our members to July 1, 1912, which is the ending of our fiscal year, was 310, showing a net increase of 36 over last year's report after taking out 13 members dropped for non-payment of dues. This shows that our Association is having its usual normal, healthy growth that has characterized it from the start. We have always been able to maintain our membership during the year by enough new members to make up those that are dropped through resignation and non-payment of dues. At the convention time we always increase quite materially.

The three standing committees of our Association are in good condition and should have interesting developments to report. The Standardization Committee, of which your Secretary is chairman, has to report that the standard rolled brass sample is practically ready for distribution through the Bureau of Standards, and that the sand-cast sample is in process of preparation. This work naturally goes very slow, but when finished is of great value.

The committee appointed during the year to co-operate with the Bureau of Mines is accumulating information and will report good progress. The committee appointed to co-operate with the Bureau of Standards will also be able to report progress along very satisfactory lines. It would seem that we made no mistake in starting out along the lines mentioned, and that our institute fills the need by supplying these Government bureaus with the practical information that they are in search of.

It is to be hoped that the arrangement this year of having the meetings held in the hotels will prove a very satisfactory one, and that the quiet room which we have so much needed in the past will overcome all objections to getting satisfactory discussions. Your Secretary has from time to time during the year made a special effort to watch the operations of other technical societies, and is pleased to report that several suggestions which he has gotten have been put into effect. We are now selling copies of our transactions regularly to several libraries throughout the country, and an effort will be made during the year to increase this list. We have also sold to our own members bound copies of the back transactions, and have on hand at the present time about 200 each of volumes four and five ready for sale to new members or other interested parties. The practice of having about 200 extra copies on hand will be carried out from now on, and should be the means of creating a considerable revenue for the Institute. The few volumes of one, two, and three which we had on hand are practically exhausted. We have about two copies of volume three available and none of volumes one and two.

I want to express my appreciation of the splendid work done by our Committee on Papers, of which F. O. Clements is chairman. Our program looks exceptionally strong this year and should make our transactions very valuable. The fact that we have been able to get our papers well in advance has enabled us to publish the majority of them and distribute them prior to the meeting. This is a decided advantage over last year's practice, and it is to be hoped that it can be followed out in the future.

In this connection I would say that the bulletins which are published from month to month will be added to the transactions when the bound volume is made up, so that all members ordering the bound volume will have the entire printed matter of the Association for reference.

If the number of letters coming in to the Secretary's office is any indication of the interest of our membership, as well as the value of our Institute, it would seem that we are on a better footing at the present time than ever before. The report of our finances for the fiscal year ending July, 1912, is as follows:

Receipts	$1,713.43
Disbursements	1,632.43
On hand July 1, 1912	$81.00

THURSDAY MORNING SESSION.

The session began at 9:30 and opened with the reading of a paper by Dr. W. E. Campbell, of Columbia University, New York, on "The Thermal Diagram with Special References to the Bronzes." This paper was briefly scanned through by Dr. H. W. Gillet, who gave an extended and interesting explanation of the equilibrium diagram in connection with his own paper on "The Influence of Pouring Temperature on Manganese Bronze" and which was illustrated by numerous samples of manganese bronze test specimens which had been "pulled" to rupture and were mounted so as to allow of examination of the fractures. This paper is published in this issue of THE METAL INDUSTRY.

Another paper on a kindred subject was read by W. R. Dean, of the Hyde Windlass Company, Bath, Me., on "Foundry Tests and Foundry Practice." This paper, which is also to be found in this issue, came in for considerable discussion. A paper by Dr. E. Weintraub, of the General Electric Company, West Lynn, Mass., on "Progress of Work on Boron Suboxide as Used as a Dioxidizer in Non-Ferrous Metals," was read by C. A. Hansen and was illustrated by means of castings of pure copper that had been made by the process described in the paper. In the discussion which followed, the information was brought out that if an excess of boron should be used it remains on top of the bath and causes no depreciation of the electrical conductivity of the copper. A slight excess of boron will collect on the riser and do no harm. In order to tangle the excess boron up in the metal it is necessary to cool the pot or crucible down until the metal is thick, but even then after such metal has been poured the conductivity will be 90 per cent. with as much as 5 per cent. of boron in the copper.

A paper by Jesse L. Jones, of the Westinghouse Electric and Manufacturing Company, Pittsburgh, Pa., on "Test Blass for Non-Ferrous Alloys" was read by Secretary Corse, and this was followed by the reading of the report of G. H. Clamer, chairman of the Committee on Standard Test Bars. This report was as follows:

REPORT OF COMMITTEE APPOINTED TO CONFER WITH THE BUREAU OF STANDARDS; ALSO DISCUSSION, "TEST BARS FOR NON-FERROUS METALS."

Mr. Jones' paper gives us a good practical information in connection with the subject it discusses; *i. e.*, "Test Bars for Non-Ferrous Alloys." Mr. Jones, I am delighted to say, is a member of our committee which has been appointed by your Executive Board to confer with the Bureau of Standards on the subject of "Test Bars for Non-Ferrous Metals." The search for the proper information and facts which will enable your committee to intelligently recommend standard practice and a standard test bar is an arduous one—one which will require long and conscientious experimenting and study. The matter is, of course, greatly complicated by reason of the diverse properties of the many non-ferrous alloys. The establishment of a standard test bar for cast iron or steel is a simple problem in proportion.

I have thought that our members would be interested in knowing just what action has so far been taken by your committee, and will ask your indulgence while I present the following brief report: The desirability for a standard test bar for the

non-ferrous metals and standard method for casting the same is recognized by every foundryman who has had to do with the production of castings which are subject to physical specifications; also by the consumers who have given the matter conscientious consideration. The desirability and dire need of such a standard and standard practice was talked over among our members, but it remained for our strenuous Secretary to bring the matter to a focus by bringing the subject before the Bureau of Standards and securing the sanction of the Bureau to co-operate with our institute to determine upon such standards. At the meeting of your Executive Board in Buffalo in January a committee was appointed for this purpose. Your committee has held one meeting with Mr. Howard, the representative of the Bureau, at which meeting the following line of work was planned:

Your committee recommended that this work could be best carried on if the Bureau of Standards would put in the necessary and proper equipment for carrying on the work. Mr. Howard reported that he thought that it would be possible to install such equipment at the Pittsburgh branch of the Bureau of Standards. Your committee discussed the matter of equipment, and with the aid of Mr. Jones a complete list was afterwards presented to Mr. Howard, who, after receiving the proper authority, placed the order for the same, and I am happy to say that the little foundry for carrying on this work is now being fitted up. I hardly think it is necessary to go into details concerning the equipment, but suffice it to say that it is all that is required for the proper handling of the work. The necessary skill will be secured to melt and cast the alloys satisfactorily, and the scientific observations, pyrometer readings, etc., will be in capable hands. The physical and chemical work will be done in the Bureau laboratories.

The problem before your committee was such a large one that we were perplexed, as we stood upon the threshold, to know just where to begin; but it was finally decided, after considerable discussion, that we attempt to solve only one problem at a time; *i. e.*, take up one alloy and study it under all conditions of casting, and cast the same in all the promising forms of test bars. The natural thing to do would be to take up first the simplest alloy. The Binary alloy, copper and tin was first suggested; but, as we all know the wonderful influence of oxidation upon this alloy and the diversified results to be obtained by the use of a deoxidizer like phosphorus, we concluded that the standard government alloy—

Copper	88%
Tin	10%
Zinc	2%

would be the preferable one to start on, for the reason that this gives very uniform results and the oxidization is taken care of by the zinc. What your committee hopes to accomplish is the following:

First: To determine the most satisfactory dimensions for a test bar (probably more than one will be necessary).

Second: To determine the most satisfactory form in which to cast such a bar, in order to give uniform results representative of the metal under consideration, i. e., how best to attach it to a casting if a coupon is desired, taking into consideration the size and form of the casting, or, if cast separately, the size, form and method of gating the bar or block to which it is attached.

Third: The proper conditions for casting.

Fourth: Relationship between chill and sand cast alloys.

Fifth: The amount of shrinkage on a 12″ bar.

From the above short outline of the work, it will be seen

THE CHAMBER OF COMMERCE BANQUET. SPEAKERS' TABLE.

Left to right—Edgar C. Neal, Vice-President of the Chamber; Wm. H. Barr; Orson E. Yeager, President of the Chamber of Commerce; Frank W. Tracy, H. D. Miles, Maj. Joseph T. Speer, Dr. Richard Moldenke, Joseph S. Seaman and William H. McFadden.

that this is an undertaking that would be out of the reach of an ordinary industrial establishment. There is probably none that would care to give, or would be in position to give, the undivided attention required. Furthermore, the expense will be considerable.

This work is in the interest of the general non-ferrous metals manufacturing and consuming interests, and is a problem which rightfully belongs to the Government Bureau of Standards, being within the scope of the field for which the Bureau was created. Our institute is to be congratulated in having secured this co-operation. Your committee hopes to materially assist the bureau in its work by making recommendations for carrying on the work, and giving it the benefit of our practical experience. We feel that results will be gotten by this co-operation, which would otherwise be impossible.—G. H. CLAMER, Chairman.

Other papers read at this meeting were "Phenomena Connected with the Tarnishing of Metals," by E. F. Burgess; "Adulterated Core Flours," by H. W. Gillet, and "Metallic Cobalt," by H. T. Kalmus.

FRIDAY MORNING SESSION.

The morning session opened with the reading of a paper on "The Difficult Art of Casting German Silver," by C. P. Karr, chief metallurgist of the Standard Chemical Company, Pittsburgh, Pa. Mr. Karr was unable to be present and his paper was read by Secretary Corse. There was some discussion after the reading of the paper, which is published in this issue. Several members stated that they had used Vanadium as a deoxidizer with good results. Others told of their experiences with good and bad returns and the general consensus of opinion was that in the majority of cases the troubles found in German silver casting were due to oxidation of the metal from pot to mold. That is, provided melting and molding conditions were normal. It was suggested that the metal be poured into a mold in which was an atmosphere of a reducing gas free from moisture. One member promised to try this out and to report results. The last paper of the meeting was read by Secretary Case and was "Commercial Alloys and the Use of the Rare Elements," by Dr. A. Hirsch.

OFFICERS OF AMERICAN INSTITUTE OF METALS FOR 1912-13.

The Nominating Committee consisting of Messrs. W. H. Barr, E. S. Fretz, Thomas Evans, W. R. Webster and W. L. Abate, which had been appointed by President Olson early in September, brought in the following ticket which was unanimously elected: President, L. W. Olson, Ohio Brass Company, Mansfield, Ohio; secretary-treasurer, W. H. Corse, Lumen Bearing Company, Buffalo, N. Y.; vice-president for rolling mills, W. H. Bassett, American Brass Company, Waterbury, Conn; for New England, W. L. Belknap, Belknap Manufacturing Company, Bridgeport, Conn; for Pennsylvania district, Jesse L. Jones, Westinghouse Electric and Manufacturing Company, Pittsburgh, Pa.; for Michigan, Ohio, Indiana district, F. O. Clements, National Cash Register Company, Dayton, Ohio; for the city of Chicago and the North West, C. C. Hoyt, Lewis Institute, Chicago, Ill.; for Illinois district, P. Mueller, H. Mueller Manufacturing Company, Decatur, Ill.; for Virginia and the South, G. H. Clamer, Ajax Metal Company, Philadelphia, Pa.; for New York and New Jersey, F. W. Riedenbach, Genesee Metal Company, Rochester, N. Y.; for Ontario and Western Canada, C. M. Ivey, Empire Manufacturing Company, London, Ontario; for Quebec and the maritime provinces, Robert Job, Milton L. Hersey Company, Montreal.

OFFICERS OF AMERICAN FOUNDRYMEN'S ASSOCIATION FOR 1912-13.

The nominating committee consisting of past presidents presented a ticket for the officers for next year, which was unanimously elected. The officers are as follows: President, H. D. Miles, Buffalo Foundry and Machine Company, Buffalo, N. Y.; Vice-presidents, F. B. Farnsworth, New Haven; T. L. Richmond, Buffalo Scale Company, Buffalo, N. Y.; Walter Wood, R. D. Wood & Co., Philadelphia; Alfred E. Howell, Phillips & Buttoruff Manufacturing Company, Nashville, Tenn.; R. A. Bull, Commonwealth Steel Company, Granite City, Ill.; T. W. Sheriff, Sheriff's Manufacturing Company, Milwaukee, Wis.; D. R. Lombard, Lombard Iron Works & Supply Company, Augusta, Ga.; S. R. Chadsey, Massey-Harris Company, Toronto, Ont.

Secretary-Treasurer, Dr. Richard Moldenke, Watchung, N. J.

ENTERTAINMENT.

As was proper most of the entertainment provided for visitors to the convention was planned in the interests of the ladies. The programme arranged included: Tuesday, September 24th, a visit to the Roycroft Shops at East Aurora for the ladies, where dinner was served at the Roycroft Inn; a banquet for the Associated Foundry Foremen at the Iroquois Hotel. Wednesday, September 25th, there was a boat ride and inspection of Buffalo Harbor and Niagara River. On Thursday, the 26th, an automobile ride for the ladies visiting points of interest in Buffalo, with luncheon at the Larkin Company's plant, and in the evening a grand subscription dinner at Hotel Statler. We reproduce a photograph taken at this dinner. The principal speakers were Secretary Nagle, of the Department of Commerce and Labor of the United States Government, and Elbert Hubbard, the sage of East Aurora and famed of the *Fra* and *Philistine*. Besides the features mentioned there were shop inspection visits, theater parties and other social diversions to keep the overworked visitors busy and to make them forget that they had a home to go to.

LIST OF EXHIBITORS, WHAT THEY EXHIBITED AND THEIR OPINIONS ABOUT THE EXHIBITION

There being no particular points at issue this year in relation to next year's exhibition, THE METAL INDUSTRY formulated three questions which were asked of the exhibitors and their representatives. These questions were as follows:

1. Do you consider exhibiting good advertising for your products. Any sales?
2. Do the results of this year's exhibiting warrant your taking space next year, more or less, east or west?
3. Do you think it is to the interest of the convention to have still or moving exhibits?

The answers received to these questions have been verified and are as follows:

OPINIONS OF OFFICIALS AND VISITORS.

"Yes, the proposition is a fine one. We have made more sales and will use more space if anything next year. We are decidedly in favor of working exhibits, our experience being that still exhibits are not of particular interest. H. R. ATWATER."

When Mr. Perkins, chairman of the Executive Board and one of the directors of the Foundry & Machine Exhibition Company, was asked the three questions mentioned above of his ideas of the convention, he pulled out of his pocket a number of cards and in sorting them over showed THE METAL INDUSTRY representative that the convention had distinguished visitors from South Africa, Finland, Sweden, Germany and other foreign lands, besides there were a number of educators connected with technical colleges, who had called at the convention and been

very much interested in the foundry machinery and appliances.

"I think there is greater business and educational interest shown in this convention than there was in any other," said Mr. Perkins, "and this big annual affair has grown from the small beginning at Cleveland eight years ago, when we held our first real exhibition. We had then but ten thousand square feet of space; this year we have forty-seven thousand square feet and I believe we will need larger space next year, for there are increasing demands for exhibition space. One firm alone, who have never before exhibited, said that they would want five thousand square feet in 1913. This convention has been a very successful one from a manufacturer's and business man's point of view and I think we are all to be congratulated on the successful outcome.—F. N. Perkins, Arcade Manufacturing Co.

When Secretary Hoyt was asked his opinion of the convention he stated the fact that one firm, whom he had difficulty to get to exhibit, had just told him that it was one of the best things they had ever gone into, and were very much pleased that the secretary had been successful in persuading them to become exhibitors. "I believe that this incident speaks for itself how successful has been the Buffalo convention," said Mr. Hoyt.

C. E. Hoyt,
Secretary the Foundry & Machine Exhibition Company.

Wilfred Lewis, president Tabor Manufacturing Company, Philadelphia, Pa.:

"I consider industrial exhibitions, such as we had in Buffalo, at proper intervals, to be good advertisers, but that the advantage gained is much less than the cost of such exhibitions every year. One year is not time enough for the development of a new line of product, nor for the awakening of sufficient interest to make such exhibitions pay. If these exhibitions came once in two or three years, they would have greater novelty, the interest in them would be much greater, and the cost of the exhibit much less.

In reply to your second question, I do not know of any way by which the results of any kind of advertising can be measured. We sold about forty machines at Buffalo, but we have no reason to think that we would not have sold them just the same if there had been no exhibition, and I am very strongly persuaded that our customers are really our best advertisers.

As to the interest attached to still or moving exhibits, I have no doubt at all that the moving exhibit is worth while, but it is not necessary in my opinion, to do actual work, such as making molds, with all the inconvenience of the sand heap and appliances which might safely be left to the imagination of the foundrymen, who are accustomed to such work."

(1) I consider that with the interest that was shown by buyers at the exhibit made in Buffalo last week, in foundry equipment, that such advertising does pay.

(2) We did not ourselves exhibit foundry equipment, and therefore did not arouse the interest that was aroused by the concerns manufacturing and displaying foundry equipment. We did attract considerable attention due to the class of our exhibits, which exhibits consisted of steam hammers, vacuum apparatus, and samples of special castings; also transparencies of various machines and several large castings which we have manufactured. It is too early, therfore, to decide whether our particular products were suitable for the buyers who attended the exhibit.

(3) I think that a display is more interesting, and arouses more interest, by having moving exhibits.—H. D. Miles.

F. W. Reidenbach who, when not on duty selling metals, superintends a Sunday school, dispensed philanthropy on the Niagara River excursion, and when asked what he thought of the convention, expressed his opinion as follows:

Genesee Metal Company.—"About my views of the convention, I think it was great. Everything seemed to go off with snap and ginger. The exhibits were fine and well carried out and it seemed to me that everybody who came to the convention went away pleased. One feature in particular was very commendable, the meetings for the reading of the papers in spots where quietness prevailed and where one could meditate without being interrupted by the jarring machinery. With regard to 1913, I cannot say what should be done, but somehow or other I have a feeling that some day the American Institute of Metals will be a large enough baby to walk alone and can meet when and where they please. Not knowing definitely where the convention is to be held next year, I do not feel disposed to make any predictions of what ought to be done. Feeling a great responsibility placed upon me in having the States of New York and New Jersey placed upon me, I will look to all my friends to help me in the capacity of vice-president to further the interests of our association."—F. W. Reidenbach, vice-president and general manager.

W. S. Quigley, Vice-President Quigley Furnace and Foundry Company, was present this year at the convention as a visitor and though he expected to stay only one day, he found the show so interesting he remained three. Mr. Quigley believed that there should be a separate building for furnaces and noisy machinery and that an exhibitor of such machinery should have office space only in the general exhibition hall. Also, said he, "I believe the exhibition company should make a special rate to exhibitors of noisy machinery as the expense of installing their exhibits is more costly."

THE EXHIBITORS.

American Vanadium Company, Pittsburgh, Pennsylvania.

Specimens of Vanadium Steel and Iron Castings, such as Cylinders, Gears, Piston Rings, Journal Boxes, Safety Hooks, Locomotive Cast Iron Parts, and a number of Vanadium Cast Steel and Vanadium Cast Iron Test Specimens showing the physical properties, also Vanadium Cast Iron Bottle Molds which have shown remarkable results, and a number of Pneumatic and Hand Chisels and Tools of Vanadium Steel.

Represented by George L. Norris, Engineer of Tests, and W. J. Bird.

Space 126, Section I.

"Our exhibit was productive of publicity, but inasmuch as we displayed vanadium steel and iron from various concerns, neither of which products we manufacture, are unable to directly attribute sales to this exhibition.

"With reference to the distinction between still or moving exhibits, in cases where the article is a new product, feel that a moving exhibit attracts considerably more attention.

"W. J. Bird."

Arcade Manufacturing Company, Freeport, Illinois.

Molding Machines, Jarring Machines, Squeezers, Core Jolt Machines, Sand Sifters, Snap Flasks, etc.

Represented by E. H. Morgan, Chas. Morgan, L. L. Munn, Jr., F. N. Perkins, W. C. Norcross, H. Tscherning, Aug. Christen, and G. D. Wolfley.

Spaces 34 to 42 and 54 to 62, Section E.

"Of course, we will exhibit next year, as we are generally satisfied with this exhibition, its results, etc. The orders have been nothing unusual, however, but the general feeling is fine. I believe that a first class exhibition would be incomplete without working models. L. L. Munn, Secretary."

The Autocall Company, Shelby, Ohio.

Electric Signal Systems.

Represented by W. S. Reynolds, Secretary, C. L. Adkins, Buffalo, A. L. Davis, Shelby.

Spaces 1 and 2, Section A.

The Automatic Transportation Company, Buffalo, New York.

Storage Battery Foundry and Warehouse Trucks.

Represented by W. C. Carr, J. H. Prescott, L. J. Goodsell, and E. L. Kleindinsh.

Space 140, Section J.

Baird & West, Detroit, Michigan.

Solvay Foundry Coke. Joint exhibit with Pickands, Brown & Co.

Represented by Edwin R. Stoughton.

Space 185, Section K.

Jonathan Bartley Crucible Company, Trenton, New Jersey.

Crucibles, Retorts, Stoppers, and a variety of Graphite Specialties.

Represented by Samuel H. Dougherty, Lee T. Ward, Herbert D. Cole, and Lewis L. Lawton, Secretary.

Space 199, Section O.

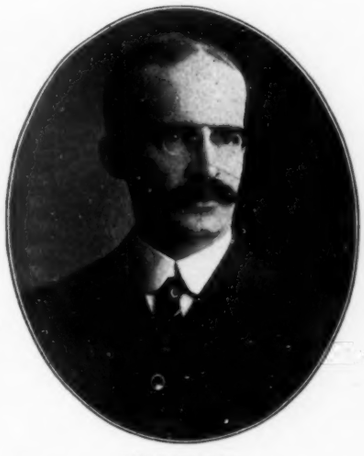
"Yes, we are more than satisfied with results. We have made more sales than at previous exhibitions, and will use about the

Officers of American Institute of Metals

WM. M. CORSE,
Secretary-Treasurer.

L. W. OLSEN,
President.

C. E. HOYT,
Vice-President for Chicago.

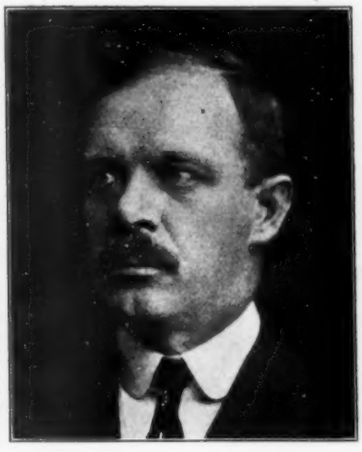


ROBERT JOB,
Vice-President for Quebec and Maritime Provinces.

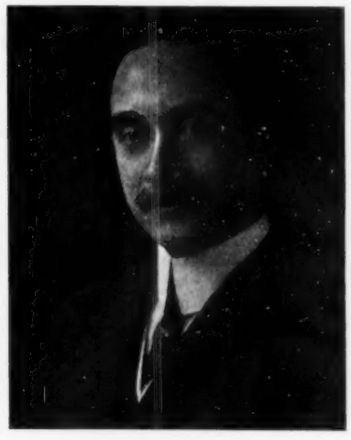
F. W. RIEDENBACH,
Vice-President for New York and New Jersey.

PHILIP MUELLER,
Vice-President for Illinois, except Chicago District.

F. O. CLEMENTS,
Vice-President for Michigan, Ohio, Indiana.



JESSE L. JONES,
Vice-President for Pennsylvania.



G. H. CLAMER,
Vice-President for Virginia and the South.

same space next year, East or West. We believe in both moving and still exhibits, but I think they should be separated.

"Lewis L. Lawton, Secretary."

Bennett-O'Connell Company, Chicago, Illinois.

Plating Dynamos, Polishing and Buffing Lathes, Polishing Wheels, Compositions, Rheostats, Volt-meters, and Ammeters.

Represented by Martin J. O'Connell and S. E. Huenerfauth.

Space 135, Section J.

"Yes, we are very well satisfied with the results here. We will certainly take more space next year and we believe fully in moving exhibits. S. E. Huenerfauth."

The Berkshire Manufacturing Company, Cleveland, Ohio.

Hand Squeezer and Pattern Drawing Molding Machines, Plain Squeezer Molding Machines, Vibrators, full line of Flasks, including iron, wood, and aluminum Snap Flasks.

Represented by R. H. York, W. D. Fraser, E. W. Sample, C. F. Battenfeld, George S. Capes, F. Hulec, and Wm. H. Nicholls.

Spaces 197 and 198, Section O.

"I think the proposition a very good one. We have made more sales than ever before. We will undoubtedly use double the space next year and we are heartily in favor of moving exhibits.

" R. H. York."

Charles H. Besly & Company, Chicago, Illinois.

Besly Combination Pattern Maker's Disc Grinder and Drum Sander, Horizontal Disc Grinder, No. 14-26-G Heavy Manufacturing Disc Grinder, No. 10-G Besly Disc Grinder for General Shop use, No. 41-18"-L Besly Grinder, Helmet Pressed Steel Ring Wheel Chuck, Geared Lever Feed Table, Besly Rotary Fixture, Helmet Temper Taps, Oil, Spiral Circles, Cement, and Glue.

Represented by Edward P. Welles, President, Charles A. Knill, William H. Allen, Charles Munson, George Klemp, Chicago, Marshall Prentiss, New York City, Robert H. Crane, Buffalo, L. H. Stone, Syracuse, and E. T. Mathewson, Philadelphia.

Spaces 151, 170 and 171, Section L.

"I believe the results from this exhibition will warrant us in taking the same space next year, East or West. I believe an exhibit should be moving wherever possible. There have been more visitors this year, greater interest and better results as to sales and prospects have been obtained.

"Charles Munson."

S. Birkenstein & Sons, Chicago, Illinois.

Metal for Brass and Aluminum Foundries.

Represented by Harry Brown, Lee Kahn and Harry Birkenstein.

Spaces 95 and 96 Section G.

"We have done more business than last year and consider the Buffalo show a huge success (outside of the noise). We will likely exhibit next year and would suggest that moving exhibits be separated from the silent ones.

"L. Kahn, Exhibit Manager."

Blystone Machinery Company, Cambridge Springs, Pennsylvania.

Core Sand Mixer.

Represented by P. L. Blystone, W. E. Wright, and H. J. LeFevre.

Space 77, Section G.

"The Exhibition was better than last year, and we are more than satisfied with result; better, in fact, than we expected. Noisy exhibits should be separated from silent ones, though we would not exhibit if we could not put on a working demonstration. Exhibits are indispensable advertisements, though trade papers have their advantages. We will be there next year.

"W. E. Wright, Manager."

Brown Specialty Machinery Company, Chicago, Illinois.

Hammer Core Machines, Core Tapering and Cutting-off Machines, Draw Screws. Pattern Lumber.

Represented by Elmer A. Rich, Jr.

Space 117, Section J.

A. Buch's Sons Company, Elizabethtown, Pennsylvania.

Molding Machines that mechanically ram (by hand jarring) squeeze, roll-over and draw patterns. Patented Aluminum Snap Flasks (round, square, and tapered). Cast Iron and Wood Mounting Plates, Cast Iron Casings, Cast Iron Bottom Plates, Patented Steel Flask Bars, Cast Iron Flasks with bottom boards for Gravity Machine, Pouring Ladles with Bail, etc.

Represented by R. S. Buch, Harvey R. Reidenbach, and Herbert P. Martin.

Spaces 152, 153 and 154, Section M.

Buckeye Manufacturing Company, Cincinnati, Ohio.

Represented by Paul J. Essick.

Space 90, Section G.

"We are perfectly satisfied and consider the Exhibition a great success. We have made a great many sales, and will exhibit next year with double space. Our exhibit has been a great advertisement, but must admit that magazine advertising has great advantages. While we prefer a more quiet exhibition, results have made us perfectly satisfied.

"Paul J. Essick, Exhibit Representative."

Buckeye Products Company, Cincinnati, Ohio.

Parting Compounds, Core Compounds, Blacking, Metal Fluxes and Foundry Supplies, Brass Melting Furnaces.

Represented by Charles J. Goehringer, C. S. Weigert, R. B. Ferguson, and J. B. Carpenter.

Space 90, Section F.

Buffalo Air Brush Company, Buffalo, N. Y.

Lacquer spraying apparatus.

Represented by P. L. Crandall.

Space 164 Section B.

"As far as we are concerned the exhibition has been very successful, and we have been treated satisfactorily. Prospects are fine, and results warrant an exhibit at the next show. A separate building, however, should be used for the 'movies.'

"P. L. Crandall, Exhibit Manager."

Buffalo Force Company, Buffalo, New York.

Blowers for cupola service, Steam Turbines for driving blowers, Motors direct connected to blowers and exhausters. Ventilators and Ventilating Fans.

Represented by C. C. Cheyney and E. F. Wendt.

Space 25, Section D.

Buffalo Foundry & Machine Company, Buffalo, New York.

Iron Castings, Steam Hammers, Dry Vacuum Pumps. Transparency views of the plant.

Represented by David Bell.

Space 161, Section M.

Buffalo Scale Company, Buffalo, New York.

Scales and Testing Machines.

Represented by E. M. Holmes and Edward Durr.

Space 66, Section F.

"The exhibition could not be better. Prospects are good. We will likely exhibit again next year, especially if the convention is in the west. Our exhibit has been a good ad. The noise didn't bother us much, as it is a necessary adjunct.

"F. A. Avery, Purchasing Agent."

Canadian Foundryman (MacLean Pub. Co.), Toronto, Canada.

Foundry Journal.

Represented by H. V. Tyrrell, P. Bain, and F. T. Young.

Space 128, Section I.

The Carborundum Company, Niagara Falls, New York.

Carborundum and Aloxite in the crude, and manufactured into grinding wheels. Carborundum Rubbing Bricks for foundry work and articles manufactured by Carborundum and Aloxite abrasives.

Represented by George R. Rayner, O. C. Dobson, Anthony Dobson, C. C. Lathrop, and F. E. Gridley.

Spaces 159 and 160, Section M.

Chicago Pneumatic Tool Company, Chicago, Illinois.

Chicago Pneumatic Air Compressors, Boyer and Keller Chipping Hammers, Little Giant Drills, Little Giant Grinders, Little Giant Casting Cleaners, Chicago and Keller Sand Rammers, Duntley Electric Grinders, and a complete line

of pneumatic and electric labor saving devices for foundries and machine shops.

Represented by Mr. Ross Watson, Mr. A. C. Andresen, Mr. W. C. Walker, and Mr. G. W. Parker.

Spaces 203 to 205, Section O.

CLEVELAND PNEUMATIC TOOL COMPANY, CLEVELAND, OHIO.

Foundry Chipping Hammers, Emery Grinders, Portable Bench and Center-Sand Rammers, Floor, Flask, Bench, Core, Air Drills, Riveting Hammers, Corner Drills, Core Breakers, Bowes Hose Couplings, Hose Clamp Tools, Air Tose, etc.

Represented by H. S. Covey, Secretary, Arthur Scott, Superintendent, J. T. Graves, Salesman, and J. A. Day, Toronto office.

Space 33, Section D.

"We have done double the business of a year ago, and prospects are A-1. Our exhibit has been a splendid advertisement, and we will surely be at next year's show. This exhibition has been much better, more artistic and more businesslike than former ones; the arrangements are fine, and the division of exhibits splendid. I am heartily in favor of the moving exhibits, and consider them indispensable.

"H. S. COVEY, Secretary and Manager."

CLEVELAND WIRE SPRING COMPANY, CLEVELAND, OHIO.

Steel Foundry Barrels, Steel Kegs, Steel Shelving, Steel Tote, Shop and Sprue Boxes. Coiled Wire Springs.

Represented by J. W. Campbell and J. B. Marshall.

Space 45, Section D.

THE CRAWFORD OIL & CHEMICAL COMPANY, CLEVELAND, OHIO.

Core Oil and Match Oil.

Represented by P. S. Crawford and Werner G. Smith.

Space 67, Section F.

"The convention was a good thing, and our results have been very good, warranting a repetition of our exhibit. The noisy exhibits should be segregated, as it is very annoying to those of the silent variety. W. G. SMITH, Secretary."

THE CRESCENT MACHINE CO., LEETONIA, OHIO.

Crescent Jointer.

Represented by J. P. Schmidt.

Space 162-B, Section M.

"It was the liveliest convention that ever happened, and the results were all that could be expected, especially for those who were in right. Our exhibit was incomplete, owing to poor traffic facilities, and has occasioned considerable loss, as we have been unable to get it in working order. A moving demonstration is the only kind. J. P. SCHMIDT, Exhibit Manager."

CROCKER-WHEELER COMPANY, AMPERE, NEW JERSEY.

Generators, Motors, and Transformers.

Represented by H. B. Hussey, A. J. Howard, G. W. Everett, and A. J. Bissonnette.

Space 190, Section N.

CURTIS & COMPANY, MANUFACTURING COMPANY, ST. LOUIS, MISSOURI.

Double Cylinder Vertical Curtis Air Compressor, operating and furnishing air for a Curtis Air Hurst suspended from a Curtis Single I-Beam Traveling Crane mounted on runway. Compressor and Crane Parts, Curtis Sand Blast, Jib Crane, Trolleys, Trolley System Switch, etc.

Represented by E. J. Clark, Advertising Manager, and F. N. Rumbley, Sales Engineer.

Spaces 43 and 63, Section E.

"The exhibition was very good. We are well satisfied with results and will exhibit again next year. The handling of traffic by railroads was very crude, and we were disappointed in not having our exhibit in its entirety. We are most decidedly in favor of moving exhibits; could not do without them. Magazine advertising good, too, provided it is followed up.

"E. J. CLARK, Advertising Manager."

DALTON ADDING MACHINE COMPANY, POPLAR BLUFF, MISSOURI.

Dalton Adding, Listing, and Calculating Machines. Dalton Adding, Listing, and Calculating Electrically Driven Machines.

Represented by A. S. Burdette, Sales Manager, Hermann A. Wende, District Sales Manager, Buffalo.

Spaces 118 and 119, Section J.

DAVENPORT MACHINE & FOUNDRY COMPANY, DAVENPORT, IOWA.

Killing's Molding Machines, Multiple Cylinder Plain Jarring Machine. Jarring Rockover Pattern Draw Machine. Stripping Machine, Jolt Squeezer Machine, Small Jolt Machine for cores, Hand Rammed Rollover Automatic Squeezer, Sand Straddling Power Squeezer.

Represented by J. T. Anderson, A. J. Goss, and J. Long.

Spaces 27 to 30, Section D.

"Our exhibit did not arrive until too late to install it, owing to railroad delay, but we borrowed one from the Gould Coupler Company, of Buffalo, so as to have something to show. However, business has been fine, and the exhibition was a splendid one, and next year we will be in evidence. I took a visitor to the freight car containing our exhibit, and he bought immediately. I consider moving exhibits unnecessary to a man familiar with this business. A. J. Goss, Exhibit Representative."

DELEVAN MANUFACTURING COMPANY, BROOKLYN, NEW YORK.

Stewart's Liquid Core Compound.

Represented by W. H. Stewart and A. R. Townsend.

Space 5, Section A.

"This is our first exhibit and we are satisfied in every way. Yes, it has been a great advertisement for us, though we do believe in magazine advertising as a side issue. As to moving exhibits, it matters little; one has to shout a bit more, that's all. WILLIAM H. STEWART, Secretary."

THE DETROIT FOUNDRY SUPPLY COMPANY, DETROIT, MICHIGAN AND WINDSOR, ONT., CANADA.

Represented by W. B. Howard, M. Z. Fox, F. McCarthy, and J. H. Lyle.

Space 112, Section I.

DETROIT FOUNDRY SUPPLY COMPANY.—"We did not exhibit any of our products at the Foundrymen's Convention, merely having a booth used as a resting place for our friends who were looking at the different molding machines and other equipment that were at the convention. During the past years where we have exhibited we found it was a great expense and practically received no results therefrom. As far as doing any exhibiting next year or taking space, this is going into the future too far and we could probably tell you more about it next spring."—W. Bruce Howard, president.

JOSEPH DIXON CRUCIBLE COMPANY, JERSEY CITY, NEW JERSEY.

Crucibles for both brass and steel melting. Special Shapes and formulas for various purposes. Phosphorizors, Stirrers, Skimmers, Stoppers, Nozzles, Sleeves, etc. Graphite Refractories, Foundry Facing, Motor Brushes and other Graphite products.

Represented by J. A. Condit, A. L. Haasis, Dudley A. Johnson, Frank Krug, L. M. Chase, Dudley Thurston, and Malcomb McNaughton.

Space 100, Section G.

"The Buffalo exhibition has been the best ever. The idea of having an evening show was a good one, as it gave local people an opportunity to attend. I noticed many foundry proprietors and their foremen making notes of various exhibits. Considerable disappointment was occasioned by the absence of metal-melting furnace demonstrations. Regarding moving exhibits, I think the Pittsburgh idea of isolation was more satisfactory, though this question is much like the story of the fellow who tried to play a game of golf at midnight in a hotel corridor. When reproached by those who were trying to sleep, and who asked him to cut out the noise, he answered: 'I am making as little noise as possible, and play golf.'

"J. A. CONDIT, Manager, Buffalo Branch."

STANLEY DOGGETT, NEW YORK CITY.

Foundry Specialties, Parting Compounds, Manganese Dioxide, Soapstone, Graphite Facing, Facings Powdered Charcoal, Dioxide of Manganese Flux, Ferro-Manganese, Ferro-Silicon, Iron and Steel Cement, Metal Workers' Soapstone, Crayons and Pencils.

Represented by Stanley Doggett, and Henry A. Roffmann.

Space 76, Section G

"This has been the best attended convention of them all, and we have taken more orders for Doggett's perfection parting than ever, and we will exhibit next year. Moving exhibits don't bother us, as noises go with conventions of this sort. Our exhibit and souvenirs made good advertising, especially the motto, 'I'm the guy that put the part in parting.'

"HENRY A. ROFFMANN, Exhibit Representative."

DUPLEX SHAKER COMPANY, CHICAGO, ILLINOIS.

Shakers for riddling sand.

Represented by I. E. Burtis.

Space 141, Section J.

"I have made the greatest hit I ever made. People are intensely interested in my shaker. Sales are most satisfactory and we shall probably use more space next year. We believe in moving exhibits by all means. I. E. BURTIS."

THE ELECTRIC SMELTING & ALUMINUM COMPANY, LOCKPORT, NEW YORK.

Brass Founders' Alloys, Pure Aluminum, Nickel Aluminum, No. 15 Aluminum Alloy, Aluminum Solder, Bronze, Silicon Copper, Manganese Copper, Manganese Alloy, Manganese Bronze, Silver Bronze, Babbitt Metal, Solder, Mineral Cleaner.

Represented by L. O. Robson.

Space 70, Section F.

"The exhibition has been a grand success, and great interest has been shown by those who attended. We are much pleased with results from our exhibit. The machinery in operation should be separated from the rest of the exhibits on account of necessary noise caused by their operation.

"L. O. ROBSON, Exhibit Manager."

ELMIRA FOUNDRY COMPANY, ELMIRA, NEW YORK.

Gow Molding and Core Machines.

Represented by A. M. Loudon, J. D. McCann and Thomas Jones.

Space 162-A, Section M.

THE FEDERAL FOUNDRY SUPPLY COMPANY, CLEVELAND, OHIO—MILWAUKEE, WISCONSIN.

Perfect fit Mold Jackets.

Represented by W. J. Adams and Ralph Ditty.

Space 113, Section I.

FELT & TARRANT MANUFACTURING COMPANY, CHICAGO, ILLINOIS.

Comptometer Adding and Calculating Machines, including special models for adding fractions.

Represented by J. C. Nevins, General Sales Manager, I. N. Mintz, and Edgar S. Stubbs.

Space 84, Section F.

"This has been a good paying proposition for us, and we will keep on exhibiting. We have interested a great many heads of foundries in our adding machines. The noisy exhibits should be eliminated, segregated or confined to certain hours. We also advocate uniformity in decorating.

"A. D. DAVIES, Special Representative."

"THE FOUNDRY" (Penton Publishing Co.), CLEVELAND, OHIO

Foundry Journal.

Represented by A. O. Backert, R. E. Densmore, E. W. Word, H. A. Andresen, T. E. Klein, and A. L. Klingeman.

Space 133, Section I.

GARDNER MACHINE COMPANY, BELOIT, WISCONSIN.

Standard Disc Grinder, Horizontal Disc Grinder, Double End Patternmaker's Disc Grinder, Ball Bearing Polishing Lathe with ball bearing countershaft, Abrasive Discs, Ring Wheel Chucks and Disc Grinder Supplies.

Represented by L. W. Thompson, J. M. Gardner, and H. C. N. Smith.

Space 124, Section J.

GARDNER PRINTING COMPANY, CLEVELAND, OHIO.

"Castings."

Represented by G. H. Gardner, S. R. Lewis, S. G. Krake, and Chas. G. Kisner.

Space 86, Section F.

GENERAL ELECTRIC COMPANY, SCHENECTADY, NEW YORK.

Ten-ton Storage Battery Locomotive equipped with 70-cell Edison Storage Battery.

Represented by J. F. Carrick.

Space 74, Section G.

"We consider the exhibition very successful; the prospects are encouraging, and we will very likely exhibit next year. The noise is less objectionable than doing without a practical exhibit. We have been very nicely treated.

"J. F. C. CARRICK, Buffalo Sales Agent."

GILL CLAY POT COMPANY, MUNCIE, INDIANA.

Fire Clay Products. Brass Furnace Liners, Special Shapes in Base Blocks, Covers, Flues and Stools for Brass Furnaces. Cupola Blocks.

Represented by Charles O. Grafton.

Space 4, Section A.

GOLDSCHMIDT THERMIT COMPANY, NEW YORK CITY.

Materials required for welding heavy sections with thermit, repairing rolls and pinions, samples of work done, samples of carbon-free alloys, samples of pipe welding.

Represented by E. A. Beck, A. F. Braid, and J. G. McCarty.

Spaces 163 and 183, Sections L and K.

GRACETON COKE COMPANY, GRACETON, PENNSYLVANIA.

Foundry Coke, Refuse from Coal Washer, and views of the plant.

Represented by C. M. Lingle, General Manager, M. F. Brandon, Engineer, Niles Anderson and Paul Debevoise, sales agents.

Spaces 98 and 99, Section G.

GREAT WESTERN MANUFACTURING COMPANY, LEAVENWORTH, KANSAS.

Electric Foundry Riddle or Sand Sifter.

Represented by Samuel H. Wilson, President and Treasurer.

Space 121, Section J.

HAUCK MANUFACTURING COMPANY, BROOKLYN, NEW YORK.

Oil Burning Appliances, including Cupola Lighters, Ladle Heaters, Core Oven and Furnace Burners, Mold Dryers, Pre-heating and Brazing Outfits, and Kerosene Torches.

Represented by A. E. Hauck, W. C. Squire, A. H. Stein, and H. E. Giersch.

Space 129, Section I.

HERMAN PNEUMATIC MACHINE COMPANY, ZELIENOPLE, PENNSYLVANIA.

Herman Jarring Molding Machines, commonly known as "Bumpers." Herman new design Jar Ram Rollover and Pattern Drawing Machine. Herman new design Jar Ram-Squeezer-Stripping Plate Machine. Herman Jar Ram Strippers. Herman Jar Ram Core Machines.

Represented by A. M. Frauenheim, M. L. Heyl, Charles Herman, Alfred Herman, R. F. Ringle, and A. Rogers.

Spaces 155, 156, 175 and 176, Section M.

In a joint interview, Messrs. Frauenheim and Heyl said that they were heartily in favor of exhibiting and have made many sales. Cannot say as regards space for next year as they are governed by business conditions at the time of exhibit. May use more or less as circumstances permit. Advocate moving and still exhibits all in one building as it is more interesting and better able to hold the attenton of the crowds.

THE HILL & GRIFFITH COMPANY, CINCINNATI, BIRMINGHAM AND PITTSBURGH.

Foundry Supplies.

Represented by John Hill and J. A. Carey.

Space 111, Section I.

HUNTER SAW & MACHINE COMPANY, PITTSBURGH, PENNSYLVANIA.

Saw Sharpening Machine, Inserted Tooth Grinding Machine, Hunter Duplex Inserted Tooth Saws, Hot Saw Vanadium Steel, High Speed Friction Saw, Higley Saw Blade, Newton Saw Blade.

Represented by F. A. Hunter and G. W. Agerter.

Space 142, Section J.

"Yes, it is a good business move to exhibit. While we have made no sales at present we have very good prospects that will result in sales. We are unable to tell about the future; we shall have to be guided by developments. We are not particularly impressed with moving exhibits so far as our own products are concerned, as we can demonstrate our grinders without having them in operation. G. W. AGERTER."

IDEAL FURNACE COMPANY, CHESTER, PENNSYLVANIA.

Coke fired Tilting Furnaces for melting non-ferrous metals.

Represented by P. J. Sweeney.

Space 78, Section G.

"I certainly do consider exhibiting good advertising. We have not as yet decided what we will do next year as that will depend upon the orders that will develop later. Whether the convention is held East or West cuts no figure with me. I should think moving exhibits, particularly moving machinery, is what interests visitors. J. J. SWEENEY."

INGERSOLL-RAND COMPANY, NEW YORK CITY.

Imperial Compressor, motor driven, short belt drive. Imperial type XII Compressors, motor driven. Pneumatic Chipping, Caulking and Scaling Hammers, Pneumatic Riveting Hammers, Sand Rammers for Bench and Floor Work, Pneumatic Motor Hoists, Pneumatic Stationary Motors, Pneumatic Piston and Rotary Drills, etc.

Represented by Wm. H. Armstrong, and James J. Kelly, New York; W. A. Armstrong, and R. H. Cunningham, Cleveland; E. P. Mooney, Buffalo; James Moran, Philadelphia; George B. Raser, and W. B. Brendlinger, Pittsburgh, and E. A. Lunderville, Montreal, Canada.

Spaces 18, 19 and 20, Section B.

"Our exhibit has been a good advertisement, and we have attained the best results of any convention yet held. We will be at the next exhibition. This one has been a decided success, due to the splendid housing of the display and the excellent management by the exhibition company. A proper demonstration can hardly be made without moving exhibits.

"E. P. MOONEY, Western Representative."

INTERNATIONAL MOLDING MACHINE COMPANY, CHICAGO, ILLINOIS.

Stripping Plate Machines (Power and Hand), Turn-over Draw Machines, Combination Jarring and Turn-over Machines, Power Squeezers, Turn-over Draw and Jarring Machines for molding cores.

Represented by Edward A. Pridmore, W. W. Miller, and J. W. Dopp.

Spaces 79, 80 and 81, Section G.

"I would say that we consider exhibiting our machines at the annual conventions a most excellent way of advertising. We always make a great number of sales. Business this year was exceptionally good. This we attribute to conditions all over the country being most favorable so far as we can judge and to the fact that we exhibited a new type of machine which is in great demand.

"The results of this year's exhibit will certainly warrant our taking space next year. As to whether it will be more, the same or less, that will depend upon the number of new machines that we have to show. We are well satisfied with the selection that we understand has been made for next year's exhibit—Chicago. We think it well to make a change in localities each succeeding year. In this way foundrymen all over the country can be accommodated. In regard to whether still or moving exhibits are interesting or desirable, that depends upon the nature of the exhibit. Both last year and this year we had what might be called a still exhibit which seems to suit our particular method of exhibiting our line of machines. EDWARD A. PRIDMORE."

INTERSTATE SAND COMPANY, ZANESVILLE, OHIO.

Sands for iron and steel molding purposes. Clays for daubing and lining ladles and furnaces.

Represented by L. K. Brown, E. M. Ayers, and F. L. Moore. Space 109, Section I.

SPENCER KELLOGG & SONS, INC., BUFFALO, MINNEAPOLIS, NEW YORK.

Foundry Oils (Linseed-base) of scientific and dependable uniformity made for the production of satisfactory sand cores and castings.

Represented by Milton S. Finley, Urban W. Fink and W. R. Melville. Space 107, Section I.

FOUNDRYMEN'S BANQUET AT THE HOTEL STATLER, SEPTEMBER 26, 1912.

Front row, left to right—Orson E. Yeager, Frank B. Baird, Secretary Charles Nagel, U. S. Dept. of Commerce and Labor; Frederick C. Slee, Henry D. Miles, Dr. Richard R. Moldenke. Back row—L. W. Olson, Wm. Corse, F. W. Tracy, Maj. Joseph T. Speer, Wm. H. Barr, John D. Wells and Theodore L. Richmond.

JAMES A. LANIGAN & COMPANY, BUFFALO, NEW YORK.

Draughtless Stoking Door. Boltless Oil Box standard M. C. B. Consulting Foundry Engineer. Steel, Gray Iron, Semi Steel and Malleable Practice.

Represented by James A. Lanigan, Pres't., J. A. Corson, Mg'r., and Wm. Wark, Vice Pres't.

Space 196, Section O.

LINCOLN ELECTRIC COMPANY, CLEVELAND, OHIO.

Electric Welder for the repair of broken metal pieces or the repair of defective castings.

Represented by J. F. Lincoln, Max C. Ewing, and T. E. Sturman.

Space 9, Section A.

"We certainly will exhibit next year, and with larger space. We have been handicapped considerably for want of power, the transformer capacity being insufficient to demonstrate our electric welding device properly, and in this regard we have

a decided kick. However, our exhibit has been a good ad. and I consider moving exhibits the best manner of display.

"MAX C. EWING, Exhibit Manager."

DAVID LUPTON'S SONS COMPANY, PHILADELPHIA, PENNSYLVANIA.
Sales Office: New York, Pittsburgh and Chicago.
Lupton Steel Sash, Lupton Steel Partition, Pond Continuous Sash for monitor and sawtooth roof, Pond Operating Device, and Pond Truss and special design for Foundries and Forge Shops.
Represented by Clarke P. Pond, Sales Manager, and C. F. P. Buckwalter, Assistant Sales Manager.
Space 83, Section F.

MIDLAND MACHINE COMPANY, DETROIT, MICHIGAN.
Grime's Hand Rammed Roll-over Molding Machines, Power Jolt Roll-over Molding Machines.
Represented by George L. Grimes and Charles Skeffington.
Spaces 6 and 7, Section A.

WALTER MACLEOD & COMPANY, CINCINNATI, OHIO.
Sand Blast Machine, Sand Dryer, Sand Separator, Oil Burning Appliances including Cupola Lighters, Ladle Heaters, Mold Dryers, etc., Oxy-Acetylene Welding and Cutting Apparatus.
Represented by Walter MacLeod and W. F. Stodder.
Space 82, Section G.

J. S. MCCORMICK COMPANY, PITTSBURGH, PENNSYLVANIA.
Five-ton McCormick Continuous Sand Mixer, Blystone Batch Mixer, Dean Pneumatic Sand Riddler, Murphy Pistol Sprayer. Facings and Supplies of all kinds.
Represented by J. S. McCormick, T. E. Malone, and S. R. Costley.
Spaces 157 and 158, Section M.

THE METAL INDUSTRY, NEW YORK CITY.
Magazines, Books and Pamphlets.
Represented by Palmer H. Langdon, Louis J. Krom, George W. Cooper, Thomas A. Trumbour, Edward B. Fritz, and Henry Schweigert.
Space 130, Section I.

THE MONARCH ENGINEERING & MANUFACTURING COMPANY, BALTIMORE, MARYLAND.
Latest 1912 models of "Monarch" Improved Furnaces, using oil, gas, coke, for fuel, for melting, heating, forging, annealing, heat treating, etc., relating to Metallurgical and Electro Chemical practice, Acme Core Ovens, crucible or non-crucible tilting, Stationary or Pit Drop Bottom Furnaces, Reverberatory, Pre-heated Air, Muffle, Babbitt, Fowler Heaters for Foundry Ladles, Aluminum Tilting, Eclipse Bolt Heating Blowers, Pumps, etc. Oil and Gas Burners, Brazing and Galvanizing.
Represented by James J. Allen, M. W. Woodburn, James H. Fowler, H. D. Harvey, and Joseph Rinicker.
Space 172, Section M.

"You bet I do consider exhibition space good advertising," said Mr. Harvey with his Baltimore smile. "We have sold enough furnaces to twice pay our expenses and we will want more space next year. This year we had 450 square feet. In 1913 we will want between five and six hundred. I believe in moving exhibits wherever permissible. I would rather have our furnaces going."

MOTT SAND BLAST MANUFACTURING COMPANY, CHICAGO, ILLINOIS.
Sand Blast Machine.
Represented by E. J. Rosenthal and George Fletcher.
Space 8, Section A

"Yes, this exhibition has been a splendid thing for us. Sales have been pretty fair, and away ahead of last year's, and we will exhibit again. I believe in this style of advertising, but also in magazine publicity. As to moving exhibits, I don't particularly object to the noise, and consider it part of the show.

"E. J. ROSENTHAL, Vice-President and General Manager."

NATIONAL LEAD COMPANY, NEW YORK CITY.
Pressure Die Castings, Babbitt Metals, White Lead, Red Lead, Linseed Oil and Solder.
Represented by Bob Andrews and J. E. Curtis, New York, and P. J. Hoeffer and A. S. Thompson, Buffalo.
Space 108, Section I.

THE NEW HAVEN SAND BLAST COMPANY, NEW HAVEN, CONNECTICUT.
Self-contained Sand Blast Barrel.
Represented by C. A. Dreisbach.
Spaces 16 and 17, Section B.

"This has been a very good show, and the results have been a great deal better than we expected. We will be at the next exhibition. Moving exhibits are necessary, and we are heartily in favor of them. Our exhibit has been a great ad.

"C. A. DREISBACH, President and Manager."

NORTON COMPANY, WORCESTER, MASSACHUSETTS.
Grinding Wheels, Aluminum and Crystolon; Grinding Machines, floor type; Protection Devices for grinding machines; Oil and Sharpening Stones and Norton Alundum Refractories and Laboratory Ware.
Represented by Carl F. Dietz, E. W. Dodge, M. A. Williamson, George S. Welker, George C. Montague, and L. C. Griffin.
Space 116, Section J.

THE S. OBERMAYER COMPANY, CHICAGO, CINCINNATI, PITTSBURGH.
B. Z. Core Venting Machines.
Represented by S. T. Johnson, E. D. Frohman, O. J. Peterson, W. M. Fitzpatrick, O. C. Olson, and F. H. Dodge.
Space 115, Section I.

OHIO MANUFACTURING COMPANY, PAINESVILLE, OHIO.
Steel Racks, Steel Barrels, Steel Kegs, Steel Shop Boxes, Steel Barrel Trucks and Adjustable Shop Tools.
Represented by L. R. Reed.
Space 127, Section I.

OHIO SAND COMPANY, CONNEAUT, OHIO.
Molding Sands and Core Sands.
Represented by F. E. Gordon and U. E. Kanavel.
Space 110, Section I.

OSBORN MANUFACTURING COMPANY, CLEVELAND, OHIO.
Branch plants: New York City and Milwaukee.
Plain Jolt Molding Machines, Direct Draw Roll-over Jolt Molding Machines, Core Jolt Molding Machine, Drop Plate Flask Stripping Machines, Stripping Plate Machines, Direct Draw Roll-over Machines, Rock-over Drop Draft Molding Machines, Roll-over Rock Down Molding Machines, Plain Squeezers, Drop Draft Squeezers and Mechanical Pattern Drawing Machines.
Represented by H. R. Atwater, J. H. Galloway, E. T. Doddridge, L. R. Palmer, M. W. Zeman, W. J. Halliday, and F. B. Atwood.
Space 143 to 150, Section L.

J. W. PAXSON COMPANY, PHILADELPHIA, PENNSYLVANIA.
Foundry Equipment and Supplies. Improved Pneumatic Tripod Sifting Machine, Sand Blast Machinery, Tramrail System.
Represented by H. M. Bougher, Pres't, Howard Evans, Vice Pres't, E. M. Taggart, New York Territory; J. F. Gaehring, Pennsylvania Territory; W. S. Thomas, New England Territory; I. F. Kremer, in charge of Engineering Dept.
Space 134, Section J.

THOMAS W. PANGBORN COMPANY, HAGERSTOWN, MARYLAND.
Standard Sand-Blast Machine. Sand-Blast Machine equipped for portable service, Sand Separator, Sand Dryer, Modern Air Separator, High Pressure Self-contained Sight-Feed Sand-Blast Barrel, Dust Arrester.
Represented by John C. Pangborn, Vice Pres't, H. D. Gates, Sec'y and Sales Mg'r, Foster J. Hull, Mechanical Engineer, Chas. T. Bird, Ass't Mechanical Engineer, Harry W. Shockey, Mechanician, J. J. Bowen, and Alfred L. Holmes, District Sales Representatives.
Spaces 191 to 195, Section N.

"We consider the exhibition a very good one. We have made a great many sales, in fact, have contracted for all we can deliver up to the first of the year. We will certainly take no less space next year. It is apparent that moving exhibits attract more attention than still ones.

"H. D. GATES, Secretary and Sales Manager."

PEERLESS PARTING COMPANY, OTTAWA, ILLINOIS.
Parting Compounds, Blasting Sand, Molding Sand, Silica Sand, Silica Wash, Tripoli Flour and Tripoli Stone.
Represented by J. W. Mann and F. L. Ryon.
Space 97, Section G.

THE PETERSON-NATIONAL COMPANY, BUFFALO AND CHICAGO.
Core Oil, Parting, and Dry Core Compound.
Represented by T. J. Peterson, H. S. Peterson, J. A. Drake, George A. Burman, G. W. Doty, C. H. Cotton, L. C. Allen, J. Purvis, A. L. Fay, and R. S. Hoffman.
Spaces 93 and 94, Section G.

"The exhibition was a dandy, and the results were very good. We will meet you at the next one, and will have twice as much space. The noise-making machinery should be separated. Aside from that everything was perfect.
"GEORGE A. BURMAN, Buffalo Manager."

PICKANDS, BROWN & COMPANY, CHICAGO, ILLINOIS.
Solvay Coke.
Represented by James A. Galligan, George A. T. Long, T. W. Glasscot, Edwin A. Bateman, and Bayard T. Bacon.
Space 185, Section K.

THE G. PIEL COMPANY, LONG ISLAND CITY, NEW YORK.
The "Halterbeck" Milling Machine (Woodworking type), for producing forms of regular or irregular character, either concave or convex. Universal Abrading Machine (Woodworking type), for sand-papering forms, straight, concave and convex.
Represented by Arthur Piel, and John Halterbeck.
Space 200, Section O.

HENRY E. PRIDMORE, CHICAGO, ILLINOIS.
Stripping Plate Molding Machines, Rock-over Drop Molding Machines, Electrical Driven Jarring Machine, and Air Squeezer Machine.
Represented by Mrs. Henry E. Pridmore, Henry A. Pridmore, A. V. Magnuson, R. E. Turnbull, and D. F. Eagan.
Spaces 12 to 15, Section B.

"The Buffalo exhibition has been very satisfactory, surpassing the show of a year ago; yes, we will be at the next exhibition.
"MRS. HENRY PRIDMORE, President."

ROBESON PROCESS COMPANY, AU SABLE FORKS, NEW YORK.
Glutrin for cores, molds, washes, and general sand binding.
Represented by D. S. Robeson and W. Ed. Baird.
Space 87, Section F.

THE ROESSLER & HASSLACHER CHEMICAL COMPANY, NEW YORK CITY.
Trisalyt, for Electro Plating, all finishes of Copper, Brass, Zinc, Bronze, Gold and Silver.
Represented by Dr. Max. G. Weber, William Schneider, and Mr. Carl Dittmar.
Space 137, Section J.

"For our line of platers' supplies the results of exhibiting were not entirely satisfactory," said Mr. Dittmar. "Still the results were better than we expected and we made a few sales. If the exhibition is held in Chicago next year we may exhibit, because we have a Chicago office. I think it would be better to have both still and moving exhibits."

ROGERS, BROWN & COMPANY, CINCINNATI, NEW YORK, CHICAGO, BUFFALO, PITTSBURGH, CLEVELAND, BOSTON, ST. LOUIS, BIRMINGHAM AND PHILADELPHIA.
Pig Iron, Coke, Ferro Manganese, "Rosiclare" Fluor Spar. The Story of Pig Iron "From Mine to Molder" in moving pictures. The mining, shipping of iron ore, the manufacture of pig iron and steel.
Represented by Henry B. B. Yergason, Manager in charge, R. T. Melville, F. J. Waldo, Douglas Bissel, A. F. Stengel, W. S. Rogers, E. C. Maurer, Henry Bausch, S. B. Morrison, R. E. Blazo, H. W. Fernald, R. W. Clark, O. Arlt, S. W. Hubbard.
Section H.

THE SAND MIXING MACHINE COMPANY, NEW YORK CITY.
Self-Propelled Sand Cutting Machine and Portable or Traveling Molder's Bench.
Represented by V. E. Minich, Vice Pres't and Gen'l Mg'r, Wm. A. Heartt, Special Western Representative, Hutton H. Haley, Special Eastern Representative, and B. F. Doup.
Spaces 164 to 168, Section L.

"We certainly do believe in making an exhibit of this kind; we have made sales and have many prospects. We will probably use larger space next year considering the fact that we are considering bringing out some new machinery. We advocate moving exhibits and think it better to have all the exhibits in one building.
"V. E. MINICH, Vice-President and General Manager."

WILLIAM SELLERS & COMPANY, INCORPORATED, PHILADELPHIA, PENNSYLVANIA.
Universal Tool Grinding and Shaping Machine, motor driven; Drill Grinding Machine, motor driven; Centrifugal Sand Mixing Machine, motor driven; Centrifugal Sand Mixing Machines, belt driven.
Represented by Edward L. Holljes.
Spaces 31 and 32, Section D.

SHEPARD ELECTRIC CRANE & HOIST COMPANY, MONTOUR FALLS, NEW YORK.

THE W. W. SLY MANUFACTURING COMPANY, CLEVELAND OHIO.
Photographs of Cleaning Mills, Cinder Mills, Dust Arresters and Sand Blast Installations.
Represented by W. C. Sly, George J. Fanner, P. W. Graue, T. J. Morgan, and B. H. Reddy.
Space 92, Section G.

"We have received more orders and prospects are better than at any previous convention, and will surely exhibit next year. This exhibition was a "howling" success. We have lost our voices, but have filled our books with orders.
"G. J. FANNER, Vice-President."

J. D. SMITH FOUNDRY SUPPLY COMPANY, CLEVELAND, OHIO.
Sand Blast Machine.
Represented by P. G. Smith, and J. S. Smith.
Space 88, Section F.

"The Buffalo exhibition was one of the best I ever attended, and the arrangement was perfect. We will surely exhibit next year. Our results have been very good. I think that more equipment has been sold during this convention than ever before. A working exhibit is the best idea, and should be made a part of the main exhibition. Isolating working models is a detriment to making sales, as they are easily overlooked.
"P. G. SMITH, Secretary."

R. P. SMITH & SONS COMPANY, CHICAGO, ILLINOIS.
Black and Tan Congress Shoes for Molders and Foundrymen.
Represented by Jake B. Smith, Jr., Vice Pres't and Sec'y.
Space 69, Section F.

"The results from our exhibit have been very good, indeed, and certainly warrant a repetition next year. Great interest was shown in our display of foundrymen's and molders' shoes, and the exhibition in general was very educating to those interested in foundry equipment.
"J. B. SMITH, JR., Vice-President and Secretary."

STANDARD ALLOYS COMPANY, PITTSBURGH, PENNSYLVANIA.
Vanadium and Uranium for brass and bronze castings; Babbitt and other White Metals.
Represented by Joseph A. Kelly, C. Powell Karr, L. S. H. Gable.
Space 132, Section I.

STANDARD LINSEED COMPANY, CLEVELAND, OHIO.
Foundry Linseed Oils, Core Oils, etc.
Represented by W. Weisenberg.
Space 131, Section I.

THE STANDARD SAND & MACHINE COMPANY, CLEVELAND, OHIO.
Standard Roll Mixer and Bonding Machine, and Standard Batch Mixers.
Represented by H. G. Boughton, J. A. Boughton, E. J. Smith, and J. L. Hopper.
Spaces 173 and 174, Section M.

STERLING WHEELBARROW COMPANY, WEST ALLIS, WISCONSIN.
Steel Foundry Flasks, Foundry Wheelbarrows and Snap Flasks.
Represented by I. R. Smith and H. H. Baker.
Space 125, Section I.

FREDERIC B. STEVENS, DETROIT, MICHIGAN.
"The Elephant."
Represented by James F. Hughes, Alfred T. Wagner, and George B. Bell.
Space 114, Section I.

THE SUPERIOR SAND COMPANY, CLEVELAND, OHIO.
Molding Sands for heavy, medium and light gray iron, and malleable castings, Brass and Aluminum.
Represented by W. H. Smith and H. C. Koontz.
Space 68, Section F.

"We have attained big results from our exhibit, and are very well satisfied, and will likely exhibit again. Buffalo can well be proud of this exhibition, as it was one of the best ever held.
"W. H. SMITH, General Manager."

THE TABOR MANUFACTURING COMPANY, PHILADELPHIA, PENNSYLVANIA.
Foundry Molding Machines.
Represented by Wilfred Lewis, Pres't, H. W. Brown, Sec'y, John T. Ramsden, Chief Engineer, J. H. Coleman, C. H. Ellis, G. B. Hastings, and Dudley Willcox.
Section C.

W. P. TAYLOR COMPANY, BUFFALO, NEW YORK.
Locomotive and Automobile Castings of Steel made by Stock Converter Process. First of the kind made in this country. Successful in England for several years past.
Represented by James W. Gibney, Superintendent.
Space 120, Section J.

TITANIUM ALLOY MANUFACTURING COMPANY, NIAGARA FALLS, NEW YORK.
Alloys of Titanium.
Represented by Charles Vickers and A. C. Hawley.
Space 136, Section J.

"We are very much pleased with our results and believe that we have given to those interested a very good idea of the value of Titanium in both ferrous and non-ferrous metals. We look forward at taking increased space next year. C. A. VICKERS."

JOHN TUOHY, PITTSBURGH, CONTRA COSTA COUNTY, CALIFORNIA.
Adjustable Boltless Foundry Flasks and Flask Bars (Patented).
Space 4, Section A.

"Yes, our exhibit has been a good advertising proposition, and the prospects are fine. We had some difficulty in getting started, but the results certainly warrant an exhibit with larger space next year. As to the noise, if a person is interested a moving exhibit should not bother him. JOHN G. TUOHY, Manager."

UNITED STATES GRAPHITE COMPANY, SAGINAW, MICHIGAN.
Branch Sales Offices: New York, Philadelphia, Pittsburgh, Chicago, Denver and San Francisco.
Plumbago, Foundry Facings, and a complete line of Graphite Lubricants, and Graphite Paint, Boiler Graphite, etc.
Represented by H. C. Woodruff, Saginaw; F. B. Godard, Pittsburgh; J. G. Drought, Chicago; L. B. Passmore, Cleveland.
Space 65, Section F.

VULCAN ENGINEERING SALES COMPANY, CHICAGO AND NEW YORK.
Hand and Power Squeezers, Split Pattern Machines, Pneumatic and Electric Jolt Ramming Machines, Vibrators, Pneumatic Sand Shakers, Electric Oscillators, Rotary Dumping Riddles, Mold Dryers, Blow Guns, Hand and Knee Valves, Metal Saws, Hack Saws, Hand Traveling and Jib Cranes, Hoists and Trolleys, Pneumatic Riveters, Portable Punches, etc.
Represented by E. H. Mumford, Carl Falk, T. J. Mumford, F. W. Hamel, David M. Whyte, G. A. Davis, E. M. Huggins, J. T. Georgeson, James T. Lee, and H. K. Gilbert.
Spaces 46 to 53, Section D.

Mr. E. H. Mumford stated that he considered the exhibition by far the best ever held. While the floor space occupied was less than in previous years, the exhibits were arranged better and more compact, the attendance was larger, the interest keener and business outlook brighter. He said that the benefit from an exhibition of this kind always followed in the weeks succeeding its close and he saw no reason for discounting the future but thought that returns would be larger than previous years. His idea is that the exhibition should be in the fall, as this year. Vacations are over and foundrymen in general, ready to take up new things and get in line for good fall business. He is satisfied with Chicago for next year and looks for continued success of the exhibition.

WADSWORTH CORE MACHINE AND EQUIPMENT CO., AKRON, OHIO.
Wadsworth Improved Core Making Machines, Core Ovens, Sand Mixing and Compound Mills.
Represented by George H. Wadsworth, A. N. Kelly, and H. M. Lane.
Space 189, Section N.

George H. Wadsworth is the oldest continuous exhibitor, in fact, he exhibited two years before there was any organized exhibition. He said, "I certainly do believe exhibiting to be good advertising. I have made the largest number of sales I ever made. I certainly will take the same space next year, East or West, and probably more. Also I am in favor of moving exhibits but think they should be separated."

WHITEHEAD BROTHERS COMPANY, NEW YORK, PROVIDENCE AND BUFFALO.
Albany and North River Molding Sand, Jersey Molding Sand, and Fire Sand. Jersey Clay and Kaolin. Lumberton Sand and Millville Gravel.
Represented by William White, 2d, J. H. Whitehead, V. L. Whitehead, Jr.
Spaces 122 and 123, Section J.

WHITING FOUNDRY EQUIPMENT COMPANY, HARVEY, ILLINOIS.
Photographs, Drawings and Catalogs descriptive of Cranes, Cupolas and Tumblers, and complete line of Foundry Equipment for Gray Iron, Brass, Steel, Malleable, Car Wheel and Pipe Foundries.
Represented by F. A. Rundle, A. H. McDougal, and B. H. Whiting.
Space 115, Section I

WIENER MACHINERY COMPANY, HOEVEL SANDBLAST MACHINE COMPANY, NEW YORK CITY.
Solid Steel Frame Combined Punch, Plate Shear and Bar and Angle Cutter. Open Throat Bar Shears. Sand Rammers (pneumatic). Pneumatic Chipping Hammers. Dustless Automatic Sandblast Machine. Revolving Table Type.
Represented by F. H. Scantlebury, E. G. Schmeisser, and Ernst Wiese.
Spaces 179 to 181, Section M.

"Yes, we are satisfied with the proposition of exhibiting. We have made sales and would favor Chicago or Milwaukee as Western limits. We think better results are obtained in a more central locality like Cincinnati or Cleveland. We advocate moving exhibits being separated from the still.
"F. H. SCANTLEBURY."

DAVID WILLIAMS COMPANY, NEW YORK CITY.
"The Iron Age."
Represented by C. S. Baur, D. C. Warren, W. W. Macon, M. C. Robbins, W. D. Robinson, R. A. Walker, and Percy A. Ware.
Spaces 73 and 91, Section F.

T. A. WILLSON & COMPANY, INC., READING, PENNSYLVANIA, REPRESENTED BY NIAGARA OPTICAL CO., BUFFALO, N. Y.
Eye Protector Spectacles for Industrial Purposes, for Automobilists and sportsmen.
Represented by G. J. Kreuz, G. R. Travis, W. L. Auld, and L. E. Travis.
Space 188, Section N.

WRIGHT MANUFACTURING COMPANY, LISBON, OHIO.
Portable Chain Hoists and Trolleys. Hand Traveling Cranes, Standard High Speed Hoists, Standard Screw Hoists, and Standard Trolleys.
Represented by H. H. Wright, W. F. Wright, and C. F. Wright.
Space 169, Section L.

THE INFLUENCE OF POURING TEMPERATURE ON MANGANESE BRONZE*

By H. W. Gillett.†

The method of making a manganese bronze test bar and the form of the bar has a great influence on the apparent strength. This was well brought out in the discussion of Mr. Huber's paper on the analysis of manganese bronze, presented before this society last year. The most noticeable point in manganese bars is that while a poor grade of bronze may show a clean, fine grained fracture and a low strength, a good grade of bronze only has low strength when the fracture shows yellow or lemon colored spots. Just what these spots are we do not yet know, but their cause is evident, since they appear only when a test bar has not been properly fed, and no matter how perfect the fracture of an ingot, bars made from it without due attention to feeding will always show these yellow spots. Besides the questions of the form of the bar and the method of making it, it has seemed to us that another variable should be taken into account, and that is the temperature of pouring—since the casting temperature and consequent rate of freezing may greatly affect the feeding and the grain, or size of the crystals. To test this, we made some experiments with a manganese bronze, of which the following is a typical analysis:

Copper	56.00
Zinc	41.00
Iron	1.50
Tin	0.90
Aluminum	0.45
Manganese	0.15

This corresponds well with the specifications of the American Society for Testing Materials. The tin is, of course, lower than the 2.0 per cent. allowed as a maximum by these specifications. Ernest Lewis, on page 393 of volume 9 of The Metal Industry, has made very telling criticisms of this point in these specifications. The A. S. T. M. specified a tensile strength of 70,000 lbs. per sq. in., and an elongation of 20 per cent. on standard test bars ½ in. in diameter and 2 ins. in breaking section cut from the bottom of the ingot. This is a very fair specification and one easy to meet. Instead of going to the expense of cutting and machining a bar from the ingot, we cast test bars made to size from each heat, at the same time that the ingot molds are filled. These are pulled without machining and serve admirably for rapid routine control. The bars are ½ in. in diameter and 2 ins. long in the breaking section, which is joined by a liberal fillet to the grips which are 1½ ins. long and ¾ in. in diameter. These bars are made with very heavy gates and risers to insure good feeding. However, they usually show very tiny traces of yellow spots, and give a tensile strength slightly, and an elongation considerably, below that of bars cut from the ingot or cast in a small chill mold.

We have also made bars from the "brick" pattern, some modification of which is, we believe, accepted as the best pattern for manganese test bars. This consists of a block 2 ins. high, 4 ins. wide, and 9 ins. long, carrying a keel 1 in. by 1¼ ins. by 9 ins. The keel is cut off and the bars machined to standard A. S. T. M. size from it. As a matter of curiosity, we have also cast ingot in a copper mold about 1 in. by 1 in. by 12 ins., from which ingot the standard bar is machined. Following usual foundry practice as to temperature of casting, the results on these different forms of bars are as follows:

*Paper read at Buffalo meeting of American Institute of Metals, September 23-26, 1912.

†Bureau of Mines, Washington, D. C.

Bar.	Tensile Strength, Lbs. per sq. in. Minimum.	Maximum.	Average.	Elongation % Min.	Max.	Av.
Cast to size..	75,000	85,000	79,000	15	20	16
Brick pattern.	77,000	85,000	82,000	20	35	25
Chill mold ...	86,000	88,000	87,000	18	25	23

On remelting the ingot, the tensile strength is slightly lowered and the elongation considerably increased. We took a heat of ingot which had given in the cast to size bar the following results, the pouring temperature not being taken:

Tensile Strength.	Elastic Limit.	Reduction of Area.	Elongation %	Remarks.
80,000	45,000	15%	15	Traces of yellow at fract.
79,000	44,000	18.5	17	Do

This was melted and poured at the temperatures given below, into both cast to size and brick pattern bars. The temperatures were taken with a Hoskins pyrometer. The metal was allowed to cool between casts without stirring or cooling by gates or other metal.

RESULTS ON REMELTED INGOT.

Bars Cast to Size.

Pouring Temp. Degrees F.	Tensile Strength.	Elastic Limit.	Reduction of area %.	Elongation %.	Remarks.
2,125°	79,000	38,000	28.5	28	Tiny trace of yellow.
2,125°	78,600	39,500	21	25	Do
2,000°	76,500	42,600	18.8	17	Trace of yellow.
2,000°	75,600	43,000	20.7	18	Do
1,900°	75,200	42,000	22.9	18	A little yellow.
1,900°	71,800	43,000	16.5	13	Quite a little yellow.
1,825°	68,300	40,000	18.2	14	L'ge yel. spot at cent.
1,825°	65,100	39,500	19.8	11	Do
		BRICK PATTERN.			
2,125°	77,300	41,000	31.8	35	No yellow, fine grain.
2,000°	76,900	41,500	34.1	34	Do
1,900°	76,500	41,100	30.5	30	No yellow — grain slightly coarser.
1,825°	76,000	41,700	19.7	24	No yellow — grain much coarser.

The elastic limits were determined by Capp multiplying dividers and are probably accurate within about 2,000 lbs. We do not consider the elastic limit or reduction of area of much use in evaluating manganese bronze, as the ultimate strength and elongation give more accurate figures and quite adequate data as to strength and ductility. The elastic limit runs so closely from 50 to 60 per cent. of the ultimate strength that the latter test will serve all purposes. The results are not just what we might expect. In general, the tensile strength of an alloy increases with decreasing pouring temperature, which gives quicker freezing and hence smaller crystals and a closer grain. In tests on some forty alloys of aluminum with copper, with zinc and with both copper and zinc in various amounts, we have found that roughly speaking an alloy poured at 1,500 degs. F. will not have over 90 per cent. of the tensile strength of one poured at 1,300 degs. F. This idea is upheld by the comparison of the bars poured at 2,125 degs. cast to size, and in the brick pattern, where the bars cast to size were practically free from the deadly yellow spots, and thus show that the feeding was pretty good. In this case, the bars cast to size gave the higher tensile strength, due probably to the quicker chilling of

the small bulk of metal compared to the large bulk in the brick pattern.

On the other hand, in the brick bars poured at different temperatures, although none showed yellow spots, those cast hottest were the best, and those cast coldest showed the coarsest grain. In the bars cast to size there was no perceptible difference in the grain between those poured hottest and coldest. In the bars cast to size, it is very noticeable that the yellow spots increased and the strength decreased as the pouring temperature was lowered. That is, freezing was too rapid for proper feeding. Evidently, then, we have two factors to consider—speed of chilling and feeding. In bars cast to size, the chilling is rapid, but not rapid enough to prevent segregation of whatever the yellow spots consist of. Hence the feeding is the overwhelming variable, and the hotter the bars are poured the better the feeding. In the brick pattern, the bulk of metal is so great that the chilling effect is not very great, and the form is such that proper feeding is automatic and inevitable. This pattern is the most fool-proof and will give a very good idea of the value of the manganese. It does not give the fictitious strength of a chill cast bar, and comes more closely to showing what the ingot will do in properly fed castings than any other form.

Change in pouring temperature has comparatively little effect on brick pattern bars. The elongation is affected more, though not as much as in those cast to size. The best pouring temperature for test bars appears to be from 2,000 degs to 2,100 degs. F. It should not be forgotten, however, in making castings, that heating to a too high temperature will burn out some zinc, increasing the ductility and decreasing the elongation, and increasing the danger of blows and similar foundry defects. We should therefore say that the best pouring temperature for average castings would be from 1,950 degs. to 2,000 degs. F., though the questions of shrinkage or possibility of misruns on very heavy or very light castings might alter the optimum temperature for particular patterns.

THE VAPORIZATION OF METALS*

By Joseph W. Richards.†

Most practical metal workers know that some metals are volatile; that is, can be evaporated or boiled, but few know the exact facts about the subject. At the outset, we may say that no one knows many facts about this matter, because all the facts are not known to anyone. I will try to present briefly such facts as are known.

JOSEPH W. RICHARDS.

Metals have vapor tension curves similar to that of water. Regarding water, we all know that at ordinary atmospheric pressure it boils at 100 deg. C., or at 212 deg. F. But at lower pressures it boils at lower temperatures; at one-tenth atmospheric pressure it boils at 46 deg. C. and at one-hundredth atmospheric pressure at 7 deg. C. In fact, water can be boiled at any temperature, down to its freezing point, if the pressure over it is reduced sufficiently.

A point not generally understood is that an indifferent gas in contact with a volatile substance acts like a vacuum as far as inducing evaporation is concerned. Water evaporates in a current of dry air at any temperature whatever; the only condition being that the dry air be renewed as fast as it becomes saturated with the water vapor. Even solid water, ice, will evaporate in a current of dry air, although the temperature remains below the melting point of the ice.

All that has been said of water is true of metals. They all have definite boiling points under atmospheric pressure, lower boiling points at lower pressures, and can evaporate at any temperatures down even to their freezing points, if the pressure is sufficiently reduced. They will also vaporize at low temperatures in the presence of an indifferent gas, if the latter is renewed as fast as it becomes saturated with the vapor of the metal. It is even true that metals, like ice, have some vapor tension in the solid state, quite sufficient to cause their vaporization, especially in a current of indifferent gas.

To illustrate the above principles, let us cite zinc, which boils under atmospheric pressure at 920 deg. C., but which has an appreciable vapor tension at as low a temperature as 289 deg. C. or 130 deg. C. below its melting point. This tells us that not only will zinc evaporate rapidly when melted, in a current of indifferent gas, but that even solid zinc can give off zinc vapor. Similar facts are true, although in a smaller degree, of many metals ordinarily considered as non-volatile. Silver, for instance, can evaporate from solid ingots which are being heated by direct contact with a flame, the gases of the flame carrying away with them more or less silver vapor, just as dry air can carry off water vapor from ice.

The subject is so large, and the data at hand so meagre, that I will abstain from discussing it at length at this time, promising to go into the matter as fully as possible at a later meeting of the American Institute of Metals.

I wish, however, to draw one practical and important conclusion: Evaporation and volatilization of metals can best be avoided by melting them out of contact with currents of gases; that is, by heating in closed vessels. This can be accomplished either by melting them in crucibles with covers, or by using electric furnace heating. The latter is to be preferred, and will be found much less expensive for power than is commonly supposed. I believe, for instance, that brass can be, at the present time, melted more cheaply in electric furnaces than by fuel, almost anywhere in the United States, with great saving of the zinc usually vaporized.

* Paper read at Buffalo Convention of American Institute of Metals, September 24-27, 1912.

† Professor of Metallurgy, Lehigh University, South Bethlehem, Pa.

SALE OF METAL ARTICLES AFFECTED BY FINISH.

In the competitive system of the times the manufacturer of metal goods recognizes the fact that his wares must be attractive to the eye to compel sales, and that the general appearance of a metal article greatly affects the disposal of his goods. So the chemist and electroplater have co-operated with the manufacturer in developing ornamental effects which not only increase the beauty but also the durability of his output. The growing human desire for luxury in living demands that the most trifling things be finished as well as the most expensive.

THE PRODUCTION AND TREATMENT OF LACQUER

SOME INSTRUCTIVE REMARKS RELATING TO THE PREPARATION AND USE OF THIS IMPORTANT ADJUNCT OF METAL FINISHING.

BY FRANK P. DAVIS.*

There is much fanciful literature available upon the subject of lacquer, but the lack of practical information, and the misinformation current among users of lacquer is, in the estimation of the writer, sufficient reason for the following remarks: To many, even large users, lacquers are more or less of a mystery, and it is my purpose to impart such information as experience and observation have taught.

FRANK P. DAVIS.

I have used lacquer and have seen lacquer used in the factory under a variety of circumstances and conditions for over twenty years. I originated and developed a novel use of lacquer that was a success. I have been active in the developing and extending of pigment lacquers and have originated some of the standard finishes produced with them and my ideas expressed in booklet form have been considered good enough to be appropriated by an imitator and would-be competitor. For four years I have sold lacquers, during which time, I am proud to say, I have enjoyed the confidence of many of the leading and most progressive manufacturers, and am frequently called into consultation to advise regarding the use of lacquer and to aid and assist when perplexing difficulties occur. I have formed some strong convictions regarding the use of lacquer, what lacquer should do and what it is unreasonable to expect it to do, which I wish to express in detail.

I hope the reader will consider the foregoing an evidence of good faith and honesty of purpose rather than one of egotism, for it is self-evident that should it be otherwise, what I have to say to you would be of little value. To many people lacquer is much of a mystery, and I think perhaps this accounts for the haphazard way in which it is often kept and used. Some fundamental knowledge of lacquer should be helpful.

The proper preparation of lacquer solvents calls for the highest degree of skill and care. The solvents must be prepared water white and free from water and acid. Some solvents that are free from acid when first made will become acid with age; such solvents are the most troublesome, for the lacquer when made up will stand a good test, but on aging will give a green drip and cause discoloration of the metal. This is the trouble with the cheap substitutes that have been repeatedly tried by lacquer manufacturers and which always cause dissatisfaction. Apart from the purity of solvents it takes long experience to know what solvents to use together and in what proportions. It is impossible to use a single solvent for an all-around lacquer, dip work requires one rate of evaporation and spray work another rate. This is regulated by the solvents used and the proportions of each, and only long experience can teach it.

The base solid of lacquer is nitrated cotton, which is made by soaking perfectly clean cotton in various mixtures of nitric and sulphuric acids, at various temperatures and lengths of time. Cotton fibre is hollow and very absorbent and to wash thousands of pounds of it after nitration, so that it is absolutely free from acid, requires careful attention to say the least. There are some things that everybody is doing just now, but this is not one of them. If any acid remains in the cotton it will decompose. If the cotton is made into lacquer before this takes place so much the worse for the lacquer.

For work that requires a heavy coat of high-gloss lacquer, additions of various gums are made, some for hardness, some for gloss and some for adhesion, each in its proper proportion, and each with its requisite amount of proper solvent to carry it. Some solvents precipitate some gums and care here is required, and their relative evaporating points are to be considered also. Some gums have naturally an acid reaction which cannot be obviated, and lacquers for special high-grade work that require these gums are best kept in glass receptacles.

Most people call these lacquers gum lacquers. Strictly speaking gum lacquers contain no cotton and can usually be told by their short drip. Cotton or combination cotton and gum lacquers have a long drip and are ropy and thick. Gum lacquers, unless a very heavy coat is required, may be thinned out with three or four parts of thinner. If heavy coats are required they should be dried with considerable heat to harden them. Gums are harder after being melted than before, and if after a gum lacquer has set, sufficient heat is given to melt it on the work, the best possible effect is secured. The gloss will also be greater. This is the method used on instruments of precision where wear and lasting qualities are an essential feature.

Green and brown stains on brass and bronze wares are frequent and perplexing troubles. The former are usually caused by an acid condition of the lacquer brought about by various reasons, most frequently by improperly cleaned work. Right here I want to say that such work for absolutely first-class results must be chemically clean. Metal in the lacquer will corrode and the action will liberate the acetic acid in the solvent. The buffing material, if left on the work, contains minute particles of metal which, on account of their fine state of division, are rapidly attacked. Lacquer thinner is one of the best cleaners known and quickly dissolves this buff dirt and leaves it in the lacquer. Brass work that has much soft soldering and is acid dipped may cause trouble. The acid dip corrodes the solder. The loose corrosion washes off in the lacquer and starts action. Hollow antimonial-lead castings that are copper plated and acid dipped may cause the same trouble. The remedy is to use the lacquer in as small dip tanks as practical to use, and so gauge your requirements that there is little lacquer remaining each night, strain the lacquer when finished, through several thicknesses of cheese cloth and do not put it back into the stock can. This pouring back used lacquer is a common habit.

*New York representative of Celluloid Zapon Company, New York.

For silver work use glass tanks or stone jars. For common work use tin tanks soldered with tin. Keep the lacquer out of lead, copper or zinc tanks. I have seen lacquer used from copper tanks that was as green as sea water. I have a place in mind that makes a high-grade production, buys the highest-priced lacquer but uses zinc tanks! A thoughtful, careful workman will get better results with a fair grade of lacquer than a careless blunderer will with the best lacquer produced.

Brown streaks on brass or bronze work are usually caused by grease from the buffing. I once saw brown streaks that were traced back to the starting point, a bit of buff dirt. There was a serious kick about the quality of the lacquer until the evidence was pointed out, which was irrefutable. Some cheap kinds of buffing material are made with mineral oil and held together with paraffin. This cannot readily be cleaned off with soap or potash and will cause the lacquer to peel off. The lacquer solvents dissolve it. It takes but little to contaminate the lacquer and destroy its adhesion. If one wants proof that mineral oil will not saponify, let him observe that a certain philanthropic oil producer never monopolized the soap business.

Many users, whose production requires a medium-priced lacquer, have trouble caused by the lacquer turning white as it dries. With fusel oil at $3 a gallon, it is self-evident that to make a good lacquer for less than this price some lesser-priced solvent must be used with the amyl acetate. The lower-priced solvents are all rapid evaporating. The trouble of lacquer turning white only occurs in excessively damp weather and usually when it is so hot that the windows of the lacquer rooms are all thrown open. Rapid evaporation produces cold; it is the principle of artificial refrigeration. The work is chilled and the warm, damp air precipitates moisture just as one's warm breath acts against a window pane in the winter. This causes the lacquer to turn white. It will not occur if the work is done in a dry atmosphere. If the work dries clear there can be no bad after effect.

"Pink Silver" causes much discussion among silver platers, and I believe that there is more than one reason for it. Alloyed metals whose base is principally lead will absorb a light silver plate. This has been demonstrated. I believe this action will cause the pink color. Some hollow ware, having a fair plate on the outside and no special effort having been made with the inside, will often show all right on the former and a rich pink color on the latter, some time after lacquering. I know one plater of ability who is sure that grease left from buffing will cause pink color. No doubt an acid lacquer on a thin plate will cause it. One man who has given the matter much careful attention says he has no trouble if his work is perfectly cleaned from the red buffing material he uses, but if there is any remaining his work is sure to be pink after lacquering. His theory is that the lacquer solvents dissolve it and spread it on the work in the lacquer. I took a small piece of his rouge the size of a small pea and dissolved it in a half ounce of naphtha which was the lightest solvent available. It made a very pink solution which at the end of thirty minutes was still decidedly pink and did not settle clear for over an hour, which showed an extremely finely divided condition. His experience seems to show that he is right. Some things are matters of opinion, but the foregoing I consider to be matters of fact.

THE DIFFICULT ART OF CASTING GERMAN SILVER*

By C. Powell Karr.†

German silver is a composition of nickel, copper and zinc, in varying proportions. It is known under many titles, such as nickel-silver, Maillechort, argentan, Pachfong, Neu-silber, Weiss-kupfer, silveroid, afenide, agiroide and others. Its value in the arts depends upon its color, lustre, hardness, tenacity, toughness, malleability, ductility, its machining qualities, its resistance to alkalies and acids. Generally speaking, it is manufactured in three different ways, viz., German, English, and American. In the German method the three constituent metals, nickel, copper and zinc, are carefully weighed out. A graphite crucible is used for the melting; in its bottom is placed first a layer of copper, then a layer of zinc and then a layer of nickel, and this arrangement is continued until all of the copper is charged into the pot. One-third part, each, of the nickel and zinc is withheld until the contents of the pot are melted. The covering consists of charcoal. When the first charge is completely melted the molten metal is thoroughly stirred with an iron rod, then the zinc and nickel are gradually added as fast as the fluid charge will absorb them, well stirred, and allowed to come to a pouring heat, a small excess of zinc is then added to replace the loss by volatilization. For a rolled metal the charge is kept for some little time in a molten condition and then poured.

The English method is to melt all the nickel and copper and zinc at one fusion. The covering is of coal dust. When melted, a small quantity of a previously prepared alloy of one part of zinc and one-half part of copper by weight is added, and finally about one-fifth by weight of the previous charge of zinc is added. The mass is then strongly heated until the proper fluidity is reached.

The American method consists in melting a previously prepared alloy of copper and nickel of the required proportions. The covering is of charcoal. Then this alloy is remelted and the proper amount of zinc is added piece by piece, care being taken to preheat the zinc and to add it in such a manner as to not chill the molten bath, or to melt the zinc in another pot at just melting heat and pour the molten zinc into the molten alloy of copper and nickel, stirring vigorously during the entire operation. Various modifications of the American method as described are in vogue in various large works where German silver is made on a large scale. For example, the nickel, granulated, is melted first, and brass, rolled or rod brass is best, which contains the requisite amount of copper, is added to the molten nickel, and if such brass does not add a sufficient quantity of zinc, the required amount is calculated and added subsequently. Another method is to use Monel metal as a base containing the requisite quantity of nickel, then the deficient copper is added and finally the zinc, or a good rolled or rod brass may be added to the Monel metal to supply either all or a portion of the copper and zinc that may be lacking. In the English method the alloy is tested by withdrawing a small ladleful from the molten bath and if found porous, a fire-clay pipe containing pitch is pushed down into the molten bath to deoxidize the metal and restore it to a sound condition.

One of the great difficulties found in the preparation of German silver is to so unite its constituents as to avoid

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porosity and produce a homogeneous alloy. The high temperature required to melt nickel alone, accompanied by its affinity for carbon nitrogen, and oxygen at a high temperature and its property of occluding both hydrogen and nitrogen in its pores and the formation of oxides has well nigh driven many ambitious founders into a state of despair. A good protection against these ills is to prevent the access of these gases to the metal by a protective covering and a deoxidizing flux. Charcoal should not be used alone as a covering; broken glass accompanied by a small proportion of soda ash or calcined borax is much better. A good deoxidizing flux is the proper use of zinc itself in the making of the alloy and in also adding a small amount of *dry* chloride of zinc just after skimming the pot preparatory to pouring, and this flux should be carefully stirred through the very hot mass.

Very perfect castings have been secured by adding 4 ounces of cupro-nickel-vanadium to the molten bath, just about five minutes before the heat is ready to pour. The best procedure is to have the cupro-nickel-vanadium either in a granulated form or broken into small pieces, wrapped in a piece of paper so as to keep the mass together, allow the little heap to become bright cherry red, and then push it down below the surface and hold it there with an inverted cupped disc, the handle to which is about four feet long. The mass is held down near the bottom of the pot until it is completely absorbed by the charge. Then gently stir with a pumping motion and allow the charge to remain quietly for about five minutes, so as to give the vanadium a proper chance to perform its scouring and purifying action. The vanadium exerts no deleterious action upon the texture of the crucible. When the metal reaches a clear, limpid state, as evidenced by its greater mobility, the heat is ready to pour. Lambent flames of zinc oxide flare up at the sides when the metal is in a perfect condition.

After the alloy is made the founder's chief trouble begins. Any alloy containing nickel chills with surprising rapidity, thickens by rapid oxidation and its shrinkage when reaching its freezing point is beyond all precedent. To overcome its tendency to chill, its melting point must be materially reduced by the use of some alloy that will promote its fluidity; this may be done by the introduction of a small proportion of a previously prepared aluminum zinc alloy and is advisable where the castings do not have to sustain a hydraulic test. Where a hydraulic test must be borne, a previously prepared calcium-zinc alloy may be used with good results. To overcome its tendency to rapid oxidation on the surface of the bath, chloride of zinc in a perfectly dry state is almost a specific. To overcome its excessive shrinkage the runner on the gate must never be less than the maximum thickness or area of the maximum area of the shell of the casting. Sometimes in solid work the sprue head must weigh as much as the casting. While chloride of zinc as a flux will preserve the metal from surface oxidation, it will not protect the body of the molten charge from the absorption of such gases as oxygen, nitrogen and sulphur. The only reagent which will reach these products is one that will either be decomposed by them when in a nascent state so as to act as a carrier for them and bring them to the surface to be absorbed in the slag, or some element which has a greater affinity for them than the basic metals in the pot. There are three elements which have a greater affinity for such gases than copper, nickel or zinc, and these elements are zirconium, boron and titanium, and one element which acts both as a carrier of oxygen and has a strong affinity for nitrogen and sulphur, and that element is vanadium; for rapidity and thoroughness of the reactions obtained vanadium is par excellence. At this point, however, I wish to emphasize the importance of using a pure product of cupro-vanadium; one having any aluminum, however small the quantity, is not to be recommended for valve work or other castings requiring a severe hydraulic test.

Having secured a perfect composition and skillful treatment at the melter's hands the foundryman is still far from ultimate success. First, the body of his mold must be an open sand, his facing must be of some fine molding sand like Windsor Locks, which must be skin dried, and then the molds must be smoked by a torch; where a heavy casting is to be made, even these precautions will not lead to success; his sprue head and main feed gate must be brushed down with graphite and smoothed down with a slicking tool. Now all of this will be of no avail unless the molder has been careful to vent his mold properly at all places where it is possible for the gas to become trapped or pocketed; furthermore, the cores should be built of white lake sand, molding sand and put together with some approved core compound, the whole mass skin hardened by stale beer. In many cases even the core has to be vented. With all of these precautions the casting may prove worthless if the metal is not properly skimmed before pouring and then poured with a uniformly steady stream and at such a rate as to keep the descending column full, so as to avoid spelter marks and cold shuts. To conclude, I would say that the art of making sound German silver castings is one that is accompanied by infinite precautions, painstaking details and a devotion to thoroughness that knows no limitations.

MODERN ELECTRO-PLATING

By Percy S. Brown.

Some of the readers of The Metal Industry will remember that a few years ago the writer became envolved in a lengthy controversy* on the merits of cleaning nickel anodes, and at the same time was criticised for his then too modern ideas of nickel plating in general. This was due in great part to his statements regarding methods of depositing nickel in a very short time and to his claims that deposits could be obtained commercially that were sufficiently bright to make buffing unnecessary. It so happened that the writer was not only well informed regarding the matters in dispute, but had actually satisfied himself regarding the value of the methods of commercial tests. It was therefore with great pleasure that he met Alexandre Waldberg, of Waldberg & Company, Paris, France, during the latter's visit in this country last spring. The opportunity was offered to learn at first hand what had been done in a commercial way in France to improve the methods of nickel deposition by the application of scientific principles. Mr. Waldberg kindly gave the writer considerable data and it will no doubt prove of interest even though many still remain sceptical.

He who in this country advocates nickel solutions of high density is immediately placed on the defensive as, with few exceptions, the plating fraternity are quick to rush in with a defense of the old nickel ammonium sulphate solution which cannot be worked at a density suffi-

*The Metal Industry, September, October, November, December, 1908, and January, February and March, 1909.

ciently high to give it the desired conductivity. It remained for the chemists of the old country to evolve and commercially demonstrate the possibilities of the high density nickel solution and for the firm of Waldberg & Company, of Paris, France, to place upon the market a solution that had the additional advantage of producing a bright deposit that rivals a buffed surface.

The advantages of a solution that has high density (and of course high conductivity), and that produces a bright deposit are obvious, as it means a large reduction in the time required to produce a deposit of nickel of given thickness and at the same time eliminates the buffing operation, thus saving time, labor and material. In addition to this there is one other important feature, *i. e.*, the nickel deposit remains intact as nickel buffing is eliminated and there is no danger of edges being "cut through." All manufacturers and platers know the troubles and expenses resulting from over buffings of parts having sharp edges. A process that will overcome this difficulty both on ferrous and non-ferrous metals is worthy of careful study. It is strange that but few persons in this country have awakened to the fact that in Europe, and in France particularly, a solution is in common use, and has been for a number of years, that will produce such results. It is fair to assume that this fault lies not in the indifference of the consumer, but either in his lack of knowledge of progress made abroad in this particular industry or his inability to obtain the solution.

Without going into elaborate details it is well to call attention to the salient features of the improved nickel salts placed on the market by Waldberg & Company, and to cite some of the advantages. In the first place, the bath is easily prepared as the salts are furnished in powdered form and are quickly soluble in boiling water. A known quantity of ammonia (ammonium hydroxide) is added when solution is complete, the solution is filtered and cold water added until the proper density is obtained. The bath is then ready for use.

Some of the advantages of the Persels (the name given to the nickel salts by Waldberg & Company) bath are as follows:

1. No nickel buffing is required on highly-buffed surfaces of brass, copper, German silver, etc. On iron or steel that is first copper plated the usual buffing operation is employed, but no nickel buffing is necessary. When the nickel is applied direct to the iron or steel a light buffing operation is necessary.

2. High current densities can be used. Conservative estimates would be that Persels will deposit twice as much nickel in a given time as the ordinary nickel solution, or the same weight of nickel in one-half the time.

3. The deposit on a buffed surface is bright and on an unbuffed surface a fine white.

4. The deposit is tough and highly resistant to friction.

5. As the deposit is very dense in character, free from holes, etc., it gives excellent protection against corrosive action of air, water, or chemicals.

6. It is very economical, as the elimination of nickel buffing saves time, labor, materials and overhead charges. The same applies to the actual plating operation, as the output can be doubled without additional equipment.

7. The Persels bath is replenished mostly from the anodes, the anode efficiency being above 90 per cent. Anodes remain unoxidized to the end and therefore wear down to a commercial minimum without losing efficiency. Owing to the fact that they do not oxidize they last much longer than in an ordinary bath and give full value.

8. Pure nickel anodes may be used (and their use is recommended) and there is no loss due to oxidation, whereas nickel anodes in ordinary nickel solutions oxidize readily and considerable loss results. In the Persels bath the maximum efficiency may be obtained with pure rolled or cast nickel anodes.

9. The Persels salts are pure, and if pure nickel anodes are use no objectionable elements are introduced. No iron will be found in a Persels solution if pure anodes are used and, therefore, the so-called rusting of nickel plated parts is eliminated. The deposit from a Persels solution under these conditions is a deposit of pure nickel and not an alloy of iron and nickel.

10. There are no difficulties in preparing or maintaining the bath as it is replenished when necessary by the simple addition of Persels.

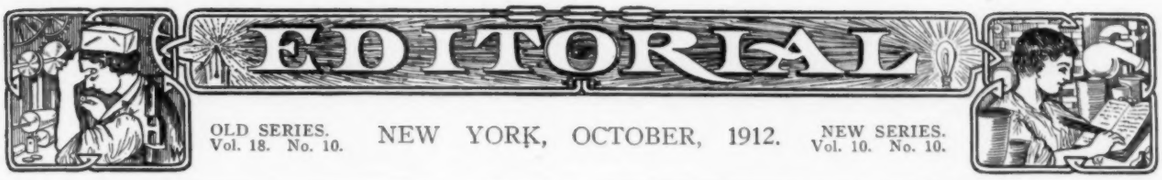
These few features are the principal ones and are enough to stimulate the interest of the plater and manufacturer irrespective of his present or past beliefs, because they are not absurd claims made to catch the unwary, but are susceptible to proof. The important point to bear in mind is that not alone do you obtain a superior deposit, but you save money while so doing and the more your output increases the greater your saving. No general figures as to the relative economy of Persels as compared to solutions now in use will be ventured at this time, as figures that would be true for one manufacturer would not be applicable to another. Some can save more than others, it depends largely on the character of their equipment, intelligence of the platers, kind of material used and other more or less important details that are a special study in themselves. The writer will say this, however, the Persels solution has been used commercially in this country and the fact has been demonstrated that economies result from its use.

It was with some surprise that the writer examined a steel tube shown by Mr. Waldberg, as the tube was brass plated with a deposit so thick that it could be cut off with a knife and the deposit was dense and absolutely uniform throughout and had a perfectly smooth surface, although it had not been buffed. The greatest surprise was the statement that the deposit had been produced in four hours. A number of persons who have seen the tube in question have been astonished and have expressed the opinion that the solution that will produce such a deposit in the time stated will outdo anything that has ever been offered in this country.

In addition to the nickel and brass solutions, this progressive firm in Paris has produced many new solutions for cleaning metals; solutions that will clean iron and deposit either copper or brass at the same time; rheostats that will actually do the work that a plating room requires; and a mechanical plating device that does not require a high voltage. The mechanical device is of the roto-plater type, but is so constructed that the anodes are inside the cylinder and as a result high cathode efficiency is obtained while a uniform deposit is produced in from one-third to one-half of the time required by the types used in this country and with the ordinary voltage that is used on all other tanks. It would appear from the above that the writer was not far from right when he made the statement that in many branches of the plating industry the chemists, platers, and plating supply houses of Europe were far ahead of their brothers in the United States. It is to be hoped that with the remarkable strides being made by the National Electro-Platers' Association in their work of educating the profession a new era has commenced and the plater will come into his own.

USE OF ALUMINUM IN AUTOMOBILES.

Reports from large foundries indicate that there will be more aluminum used in the construction of automobiles this year than ever.



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THE METAL INDUSTRY

With Which are Incorporated
THE ALUMINUM WORLD
THE BRASS FOUNDER AND FINISHER
THE ELECTRO-PLATERS' REVIEW, COPPER AND BRASS

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THE BUFFALO CONVENTION

There were several features of the Foundrymen's Convention and Exhibition of Foundry Machinery and Supplies (a full description of which is given in the opening pages of this issue of THE METAL INDUSTRY), held in Buffalo, N. Y., September 23-27, that combined to make the occasion the "best ever." The first and foremost of these to our mind was the date of holding the event. When it was announced last spring that the exhibition could not be held in June as in past years we heard a good many opinions the majority of which expressed the idea that there had better not be any exhibition until 1913. It was not believed that a fall date would be suitable. In this particular year it would be bad, it was said, because of a Presidential election. On the other hand some said that concerns would be so busy that foremen, etc., could not be spared, especially after having a vacation during the summer.

Contrary to general expectation, however, the convention just closed must go down in history as the most successful of the seven thus far held. It was successful in point of attendance—4,100 names being actually registered with a probable total attendance of between seven and eight thousand. It was successful from a business standpoint, for as will be seen in perusing the interviews reported on another page that about every one was satisfied with sales made; the interest was keen and every one was in earnest. It was successful from a scientific standpoint, as the attendance at the meetings of the various societies was larger, the interest displayed greater, the papers read better and more numerous and the discussions livelier than at any previous meeting. It was successful lastly from a physical standpoint because the weather was cool and the exhibition hall and meeting rooms were well ventilated and everyone had plenty of pure fresh air to breathe—barring tobacco smoke! Another important feature noted was the holding of the exhibit in one hall instead of in several detached buildings as in former years. While some few exhibitors complained of being annoyed at the noise made by the exhibits in operation, the majority agreed that it was better to have the exhibits in more compact form as it tended to hold the attention better than with widely separated ones. One exhibitor said he did just as much business only he "lost his voice quicker!"

The idea of separate meeting rooms for each association was a good one and we think should be carried out in the future. The member being at the hotel in which his meetings were held would be more likely to attend that meeting than if he had to go to some other place with the exhibition as a counter-attraction. The secretaries

of the different associations deserve a great deal of credit for their good work in arranging the admirable system of registration and also for getting the papers to be presented, printed and distributed early so that members had ample opportunity for discussion if they desired to. The entertainment committee should come in for praise for the excellent programme by means of which they took care of the visiting ladies and left the men free to attend to the duties of the convention.

Regarding the exhibition itself, there is little to be said. The list of apparatus and supplies shown included everything that a foundry and metal man could need in his business. Some of the newest and most novel devices shown are described in the Industrial columns of this issue of THE METAL INDUSTRY and the accounts are well worth the reading. All in all the 1912 convention scored a great success and Buffalo set a standard as a convention city that the 1913 convention city (it is said Chicago) will find hard to surpass.

NEW BOOKS

METALLOGRAPHY OF IRON AND STEEL. Albert Sauveur, Professor of metallurgy and metallography at Harvard University. Size 7¾ by 10¾ inches. 24 lessons and two appendices with a fifteen-page index. Numerous illustrations, photomicrographs, etc. Bound in olive green cloth. Published by Sauveur & Boylston, Cambridge, Mass. Price, $6.00. For sale by "The Metal Industry."

This work, which has just been published, is a classical essay on the subject of the metallography of iron and steel and has been compiled from a series of lectures delivered by the author at Harvard University. The book will be especially valuable to those seeking self instruction in the metallography of iron and steel, their special needs having been carefully considered in the arrangement of the lessons. It is also valuable as a text book to teachers and students and it will be found particularly interesting to manufacturers and users of iron and steel as due weight has been given to the practical study of the subject and discussions of ill-founded or purely speculative theories have been carefully avoided. Lastly it will be found of general interest to the reader who is interested in scientific or practical features of the metallurgy of iron and steel as the language used can be readily understood by those lacking a specialized knowledge of the subject.

While the work is designed to apply particularly to iron and steel, yet the description of the apparatus for the metallographic laboratory, which occupies the first thirty-five pages of the work, is applicable also to metallographic investigation of non-ferrous metals of all kinds as the same apparatus is used in common. Also the matter contained in Lesson I, which relates to pure metals, may be taken as symbolic of general metallurgy. We do not hesitate to recommend a study of this book to anyone who may be interested in metallography, no matter what the class of metals that it may be desired to examine.

CRITICISM AND COMMENT
WE CORDIALLY INVITE READERS' OPINIONS AND CRITICISMS OF ARTICLES PUBLISHED IN THE METAL INDUSTRY. SUGGESTIONS WELCOME.

OPTICAL PYROMETRY

To the Editor of THE METAL INDUSTRY:

I have been much interested in the description by Mr. Hermann Holz, of an optical pyrometer, published in your August issue. I find it difficult to follow Mr. Holz's distinction between the optical pyrometer and the radiation pyrometer wherein he says that the optical instrument is not based on "ascertained properties." What about the ascertained properties of the standard flame, the current required through the electric lamp for a given intensity of illumination, also the turning effect of the Nicol prisms? Surely these are at least as liable to error as those ascertained properties of the thermo-couple as used in the radiation pyrometer. I believe that the impossibility of making an automatic or recording optical pyrometer operates seriously against the optical system and in favor of the radiation instrument.

Mr. Holz has apparently discovered a new physical law because, if I have understood him correctly, he says that the constant heat radiated from the electric lamp in the instrument and in the neighborhood of the slit renders that part of the instrument not susceptible to further rise in temperature by radiated heat from an outside source. To those of us who have not yet been initiated into this new law it would appear that the ultimate temperature of any given body subject to a given amount of radiated heat would be higher if that body is also heated internally. It would therefore appear that the pyrometer which he describes would be more liable to errors due to expansion of the metal surrounding the slit than was the case in earlier instruments. Perhaps Mr. Holz can throw further light upon this anomaly.

C. A. F. FENNELL.

London, S. W., England,
September 18, 1912.

AMMETERS VS. VOLTMETERS

TO THE EDITOR OF THE METAL INDUSTRY:

In commenting on the article entitled, "Electricity in the Plating Room,"* by S. E. Huenerfauth, H. J. Ter Doest says, "as this is an error of long standing I wish to say that the following experiment will show that the voltmeter is quite unsuited for the purpose intended," etc. The writer would say that Mr. Ter Doest evidently has a lot to learn about the rheostat, voltmeter and ammeter. What is the sense of filling the tub full of work and fixing the rheostat "about right" for the work, when a voltmeter is used which tells just when the voltage is right? He does not mention the metal that is supposed to be plating on the one hundred pieces at two volts, but I would judge it to be silver.

My plan would be to fill the tub with work, then regulate the rheostat by the voltmeter until it reads one volt. Then take out part of the work and the voltage goes up. It is then time to regulate the rheostat until the voltage again reads one volt, there being no guess work. If the rheostat should happen to be on the fourth notch when the tub is full of work and the voltmeter reads one volt, it does not mean that the rheostat must be put on the fourth notch for half a tubful of work. Just back it up until the voltmeter reads one volt again; then it is impossible to burn work when silver plating.

All solutions having a standard voltage, the voltmeter not only tells when the voltage is right, but tells when the tub needs metal. For instance, should it be found that one volt is not enough for the silver tub, that alone signifies that the tub needs metal. It also indicates when the belts are slipping and if there is a short circuit. Try connecting it up in the proper manner, and one can save himself a lot of exertion.

W. THOMPSON, United Novelty Company.

Newark, N. Y., September 29, 1912.

* THE METAL INDUSTRY, August, 1912.

Shop Problems

IN THIS DEPARTMENT WE ANSWER QUESTIONS RELATING TO SHOP PRACTICE OF THE METAL INDUSTRY. ADDRESS THE METAL INDUSTRY

ALLOYING

Q.—We have difficulty in getting ductile castings when mixing copper 62, zinc 37, tin 1. Result: dry and brittle. Can you advise a flux to bring the zinc and copper together?

A.—Adding about four ounces of 30 per cent. manganese copper will deoxidize your mixture and this, with careful melting, ought to remove the brittleness. You will find, however, that this mixture will not cast well in green sand and that it will be too soft and stringy to machine well. The use of the following alloy will prove more satisfactory: Copper 76, zinc 18, tin 3, lead 3.—J. L. J.

BRAZING

Q.—Can you give us a brazing mixture for brass castings which will stand a pressure of 250 pounds?

A.—Brazing solder consists of fifty parts copper and fifty parts zinc. Your castings are probably made of yellow brass, and for this reason are injured by the heat required for brazing. Regular brazing brass contains 80 per cent. copper and 20 per cent. zinc, hence we would advise you to use a good grade of red brass for your castings that are to be brazed, such as 88-10-2.—J. L. J.

COLORING

Q.—Will you please send us a cheap and easy formula for coloring both high and low brass, black.

A.—Probably one of the best methods for coloring brass black by immersion is the ammonia-copper dip. High brass gives the best results, the color develops more slowly on low brass. The dip consists as follows:

Aqua ammonia—26 per cent.	1 gal.
Sal soda	½ lb.
Dry carbonate of copper	½ lb.
Warm water	½ gal.

To prepare the solution dissolve the copper salt in the ammonia, then add the sal soda to the warm water and mix both solutions. The articles to be blackened should be free from oil and grease and acid bright dipped, or buffed and cleansed in the regular manner before immersing in the black dip. After the color is produced, wash in cold water, pass through a potash dip to set the black, and then dry out and lacquer in the usual way.

Low brass should be treated in the same manner. A little more copper and ammonia should be used to make the dip a little stronger. To build up the dip, prepare a concentrated solution of ammonia and copper, and add a little when the solution does not work satisfactorily.—C. H. P.

COMPOUNDING

Q.—Kindly publish in Shop Problems the best way to make carbonate of nickel from sulphate of nickel.

A.—Dissolve single sulphate of nickel in boiling water, then dissolve a like amount of carbonate of soda in a separate receptacle and add the soda solution slowly to the sulphate of nickel, avoiding an excess at one time, owing to carbonic acid gas generated. When the carbonate of nickel is all precipitated, which will be noted by the clearing of the solution, decant the sodium sulphate solution formed from the carbonate of nickel and wash several times with clean, hot water. The carbonate of nickel is then ready for use. It is advisable to place it upon a wooden frame, covered with cheese cloth, to remove any excess of water that might remain with the nickel.—C. H. P.

FINISHING

Q.—Kindly tell me how cheap collar buttons are finished?

A.—The cheapest kind of collar buttons are now being made from very thin cold rolled steel. After the several parts have been pressed out, they are polished by tumbling, using steel balls. The parts are then assembled and retumbled for a short time. After polishing the buttons are plated in a mechanical plating barrel. The solution is termed an Oreide and somewhat resembles gold. After plating the buttons are polished by tumbling in a solution of fig soap and water, or any good soap solution. Steel balls of from one-eighth to one-fourth inch are used for the burnishing process. After polishing the buttons are washed and dried by the centrifugal and hot air methods and then placed upon cards for the market.—C. H. P.

Q.—Can you advise us what kind of black filler is used for sheet metal signs, such as are put in the front of a building?

A.—The material used as a filler for metal signs is the regular sealing wax, which comes in various colors, and can be procured from William Zinsser & Company, 195 William street, New York.

The method used is to heat the metal sufficiently upon an iron plate heated by any method, usually a Bunsen flame. Then fill in the letters as evenly as possible. The sign is then allowed to cool and should be scoured down even, using a piece of flat, hard wood and emery cloth, the motion should be one way. After the wax is brought down even, scour the surface of the brass with pumice stone and water, using a hand-scouring brush for the purpose. Afterwards wash, dry and lacquer the surface. This gives what is termed the Old English or brush brass finish. For a polished surface the regular rag wheel buffing will have to be accomplished, using first tripoli and then rouge composition. —C. H. P.

FLUXING

Q.—Can you advise me of a method of "tinning and dressing" and maintaining the tinning of a steel roll 4 inches in diameter and 36 inches long, partly submerged and revolving in a bath of molten solder, which also is to be protected from oxidation by a covering? The work is similar in nature to the tinning of tin plate. Also kindly explain the chemical reactions and resulting compound formed by pouring dilute Eureka flux (18 per cent. hydrochloric acid and 18 per cent. zinc, diluted with water as required) into a bath of molten solder, or evaporating same.

A.—Zinc chloride acts as a flux by decomposing into free hydrochloric acid and oxy-chloride of zinc. The free acid removes any film of oxide from the work and allows it to take a coating of solder. The oxy-chloride of zinc is insoluble in water, but will dissolve in hydrochloric acid. For forming a flux it is best to use the gray sal ammoniac, but for "throwing on" the white should be used. When the flux on a bath becomes too thick it must be removed, although glycerine has been used for thinning it. Zinc oxy-chloride would not be reduced to metallic zinc at the temperature of your solder bath, but if in making the Eureka flux any particles of undissolved zinc remain, these would contaminate your solder. A flux of sawdust, powdered rosin and powdered sal ammoniac might be tried, if the usual palm oil or tallow fluxes are objectionable.—J. L. J.

GOLD PLATING

Q.—Please print a formula for a 24-karat gold solution to be used cold. This solution is to be used on the best grade of sterling silver fancy flat and hollow ware.

A.—A cold gold solution for your purpose should contain not less than the following proportions:

Water	1 gal.
Cyanide of potassium	1½ to 2 ozs.
Phosphate of Soda	1 oz.
Fine gold in the form of Fulminate	½ oz. Troy.

The amount of cyanide of potassium depends on the current tension, but not less than two volts should be used. To produce fulminate of gold the metal should be dissolved in aqua regia (3 parts HCL, 1 part HNO_3). When dissolved water should be added and the gold then precipitated as a fulminate with 26 per cent. water ammonia, being careful not to add to excess. When all the gold is precipitated, wash the precipitate several times to remove the ammonia; then add to the cold cyanide solution previously prepared, and lastly add the sodium phosphate. Instead of dissolving the fine gold one ounce of neutral chloride of gold may be used and precipitated as a fulminate. Fulminate of gold should always be covered with water when prepared, as dry it is a very powerful explosive. Gold Trisalyt salt will give excellent results and save manipulations in preparing the solution.—C. H. P.

LINING

Q.—Kindly let me know what would be a good lining for a two-ton ladle. The metal used is 88-10-2, and is poured at 2300 degrees Fahr.

A.—Use two parts of an open sand like silica sand or sea sand and one part of Jersey red clay. Place wax tapers or strings in the lining so as to act as vents. Swab the lining with Bull Run talcum and dry the lining very slowly but thoroughly; then heat in the usual way.—J. L. J.

PLATING

Q.—Please publish the following information: What amount of bisulphite of soda should be used with a copper solution for plating zinc, and should a silver solution be stirred daily about quitting time?

A.—(1) The amount of bisulphite of soda to be used in connection with copper solution is two ounces to the gallon. (2) This is a good practice. It gives an even density to the solution and a more uniform deposit.—C. H. P.

Q.—Kindly let me know (1) how I can make a good oreide solution. (2) What is the reason, when I add arsenic to my green gold solution to make it plate antique, it rubs off so easily?

A.—(1) Oreide metal for producing imitation gold deposits can be procured from a number of concerns dealing in platers' supplies. It comes in granular form and imitates carat gold very closely. In preparing solutions the alloy is dissolved by nitric acid, then precipitated as a carbonate, carefully washed and made up as a cyanide solution. Such baths usually stand from 3 to 4 degs. Be. Anodes of the same composition must be used in connection with the baths, and a voltage of three to four. The solutions are used at about the same temperature as gilding solutions. (2) Green gold solutions as a rule should be used cold, as when used warm the arsenic does not deposit as well. Carbonate of lead is being used by many gilders instead of arsenic, and they claim a better color and more uniform green deposit.—C. H. P.

SHERARDIZING

Q.—Can you tell me how the covering of copper wire with brass is done?

A.—The brass deposit obtained upon copper wire is probably accomplished by the zinc fuming method or what is termed "Sherardizing." The copper wire is placed in a closed retort and zinc dust is added; then heat is applied until the zinc vaporizes, when it becomes impregnated in the surface of the copper wire, producing an alloy upon the surface. Many attempts have been made to electro-brass-plate copper wire, but the deposit varies in color and is quite hard and brittle, so that in drawing the deposit frequently flakes off. Therefore sherardizing would seem to be the logical method and, we believe, is the process in France and Germany. The color of brass is developed when the wire is redrawn.—C. H. P.

STANDARDIZING

Q.—Is there, or has there been adopted, a U. S. Standard in the manufacture of plumbing and steam brass goods in lengths and diameter of threads? No two manufacturers in the above line make their goods with same thread or diameter; the one is an odd or arbitrary thread from the other.

A.—No U. S. Standard has been adopted for the manufacture of the above line of goods, although the manufacturers are beginning to see the necessity of something being done in the matter. The National Association of Master Plumbers have had the matter up at their last two national conventions, and a committee has been appointed on same to take the matter up with the government. Also the National Association of Brass Manufacturers at a meeting held in Chicago this past year voted to co-operate with the U. S. Bureau of Standards, with a view to establishing uniform patterns, designs and threads for goods in the brass lines used by the government, and appointed a committee for this purpose.

In the past it seems every manufacturer has adopted his own diameter and pitch of thread for every new line of goods he would manufacture. The only standard that is in universal use is the "Briggs Standard Iron Pipe Threads," which is ¾ inch taper per foot.

About three years ago a standard was adopted in the large sizes of hose threads that are used by the different fire departments throughout the country through action taken by the Fire Underwriters' Association. It was caused by a large fire in an eastern city and they called on another fire department for help. When it arrived they could not couple on their brass hose connections to the stand pipes owing to the threads and diameter not being the same. The same thing happened also in the Middle West. In the smaller sizes of hose threads the old conditions still prevail; no two manufacturers producing the same size.

The National Association of Brass Manufacturers are now taking up the smaller sizes of hose connections and have voted to abolish the manufacture of the "Pittsburgh gauge hose thread," the same having gone in effect September 1, 1911. It will take some time to secure the adoption of a standard on all plumbing and steam brass goods, but it is coming gradually to that end. It will be a very heavy expense to some of the manufacturers, as it will necessitate changing of patterns and tools, but the plumber, steamfitter and the general public would benefit from the same.—P. W. B.

TINNING

Q.—Will you please tell me how copper kitchen utensils are tinned, also what is the best solution for cleansing such articles?

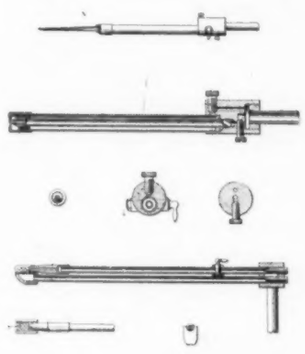
A.—Household utensils, made from copper and tinned on the inside, are made from what is termed tinned sheet copper. This material may be purchased from any of the large copper mills. The method of tinning is as follows: The copper is rolled down to the correct gauge, or within one number of that size, and then cleansed with the usual pickles and by scouring with sand. They are then coated with the flux which consists of chloride of zinc solution. The sheets are now placed upon a holder that is raised at an angle of 45 degrees with the tinning pot, so that the excess of tin will return by gravity. The molten tin is poured over the copper sheet by an experienced workman and the excess is wiped off by boys, using plumbers' tow for the purpose. The oxide that forms on the reverse side of the sheet, from the heat of the molten tin, is removed by dilute sulphuric acid pickles. The sheets are washed and dried, and then rolled to gauge and polished. In this manner they are sold as polished tinned copper and are used for the purpose mentioned. An automatic machine is now used which accomplishes the cleansing, scouring, fluxing, tinning, pickling, washing and drying in a continuous operation. For cleansing tinned articles there is nothing better than whitening mixed with a little kerosene oil, and afterwards polish with a little of the dry whitening or Vienna lime.—C. H. P.

PATENTS

REVIEW OF CURRENT PATENTS OF INTEREST TO THE READERS OF THE METAL INDUSTRY.

1,033,967. July 30, 1912. Brazing Burner. Wm. H. Van Horn, Baltimore, Md., assignor to C. M. Kemp, of the same place.

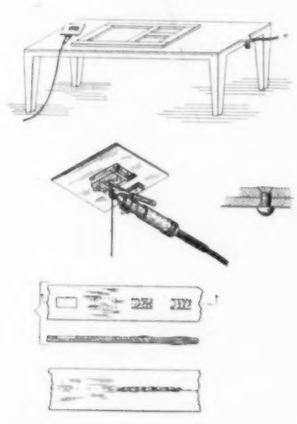
This invention relates to blast burners, and has for its object to provide a tool of the type especially adapted for the use of a hydrocarbon gas as a fuel, such as is produced by the intermingling or combination of gasolene and air.



To overcome the difficulties encountered in the use of gasolene gas, the burner shown in cut has been devised and consists broadly of two independent pipes, each receiving a supply of gasolene gas under pressure from a common source by separate channels provided with pressure reducing means, one of said pipes being fitted with a jet nozzle and the other pipe terminating in a pilot burner adjacent the outlet of said nozzle. If, now, the pilot be lighted and gasolene gas admitted to the jet pipe, the gas, on emerging from the nozzle, is lighted and kept burning by the pilot light, producing a long pencil of flame pointed at the end.

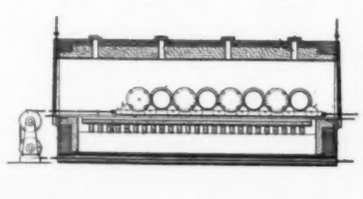
1,034,290. July 30, 1912. Method of Electro Welding. H. F. Parish, New York, N. Y., assignor to Grinden Art Metal Company, New York, N. Y.

The present process relates to that class of electric welding in which an arc is struck between the articles to be welded and an electrode. In this class of welding it has heretofore been customary to obtain the necessary weld by the action of the arc upon the juxtaposed surfaces of the joint, the latter being fused by the arc and mingling to form a homogeneous point. This action is extremely deleterious to the temper and fiber of the metal adjacent the joint and the process has consequently not gone into extensive use. This inventor avoids these difficulties and forms the joint in its entirety by the material of the electrode, as shown in cut, by connecting the latter to the negative pole of the source of electricity.



1,034,930. August 6, 1912. Sherardizing Furnace. John Riddell, Schenectady, N. Y. Assignor to General Electric Company, N. Y.

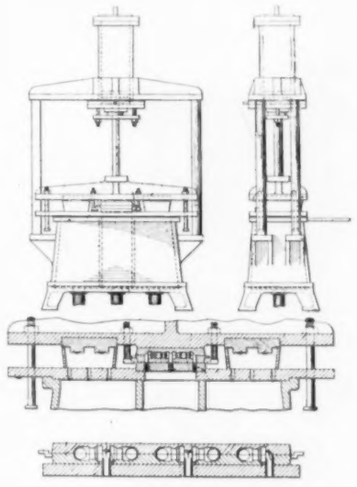
The present invention relates to the art of metal working, and more especially to apparatus for carrying out the method known as sherardizing and consisting of heating metal parts in the presence of zinc dust to form upon the metal parts a non-oxidizable surface or coating of alloyed zinc. In applying the sherardizing process it is necessary throughout the heat to continually stir the zinc dust to insure contact with all surfaces of the metal part treater, since by this process the zinc does not actually fuse or flux; the process being known as a dry one in contradistinction to the ordinary wet processes such as galvanizing. The period of treatment under heat extends from four to ten hours, and as a consequence it is necessary, when the sherardizing process is employed on a large scale, to provide automatic means for producing the stirring effect.



The object of this invention is to provide means for effectively and economically accomplishing the stirring operation in a sherardizing furnace which shall consist of simple and substantial parts not readily warped or otherwise injured by the high heat of the furnace. One form of the invention is shown in the cut.

1,034,336. July 30, 1912. Method of and Apparatus for Making Molds and Cores. J. C. Bannister, Kewanee, Ill.

This is a method for making green sand cores and half-molds which are later assembled in making a complete mold, and employed to manufacture metal castings; and the invention more particularly relates to making such cores or half-molds or molds in multiple within core boxes and flask sections in readiness for the flask to be booked or assembled and the cores transferred thereto preparatory to the later casting operation.



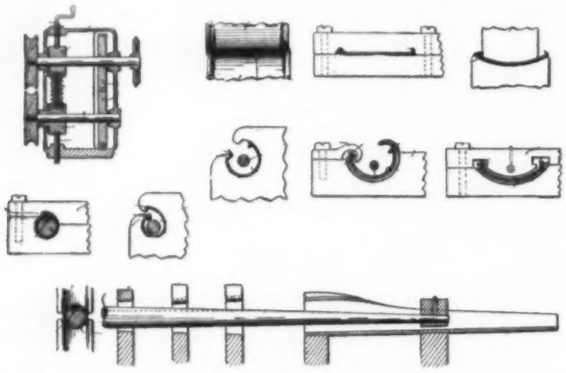
One object of the invention is to provide a novel method of handling and delivering the sand from the sand boot into the flask sections in making green sand cores and half-molds. Another object is to provide molding apparatus, as shown in cut, having improved means whereby the method of forming green sand molds and cores forming part of this invention is effected and the delays experienced in the operation of the apparatus heretofore in use are prevented and overcome.

1,034,954. August 6, 1912. Tube-Forming Machine. John D. Deebe, Detroit, Mich. Assignor to A. C. Dallas & Son, Chicago, Ill., a corporation of Illinois.

The object of this invention is to provide a tube-forming machine with means making it possible and practical to direct and feed a strip of metal, and the tube formed therefrom, through and out the machine, by a force pushing, as distinguished from a pulling force, feeding the metal of the tube therethrough, and this throughout the bending of the edges of the strip for subsequently forming a locked joint in the tube, the forming of the tube, locking the joint and finally depressing the locked joint inwardly of its periphery in the absence of any pressure in excess of that required for performing any of these several operations.

Another object of this invention is to make it practical to use between the tube-forming rolls and the feed rolls a series of forming dies, as shown in cut, spaced apart, avoiding the necessity, difficulty and expense accruing to the use of a single die for performing the same bending operation, and thereby reduc-

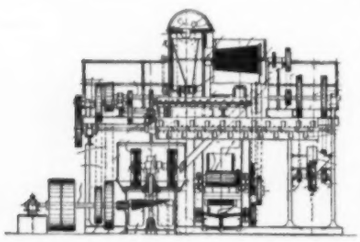
ing the friction between such a die and the strip, which of necessity follows the use of a single forming die. A further object of this invention is to provide means by which both the bending,



feeding and finally forming rolls are both yielding and adjustable with reference to each other, and at the same time inclosed by casings excluding foreign substances from their bearings and gearing, and to provide for adjusting the rollers of each pair of rolls from a point outside of said casing.

1,036,239. August 20, 1912. Apparatus for Preparing Old and New Molding Sand. George Hoffman, Hanover-Hainholy, Germany.

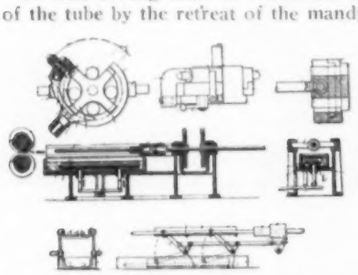
This invention relates to an apparatus for preparing molding sand as it is used for foundry purposes. An object of the invention is to simplify the manufacture of molding sand by combining a plurality of apparatus in one device, as shown in cut, these apparatus in the known manufacturing devices having been disposed in various parts of the foundry or molding room. This required a plurality of conveying contrivances which were adapted to interconnect the various devices.



Other objects of the invention are to reduce the number of conveying means interconnecting the various devices to as small a number as possible, to provide a machine which takes less floor space than the various apparatus would occupy if they would be separated from each other, and to obtain economical advantages in erecting a new plant for the preparation of molding sand compared with known devices of this kind.

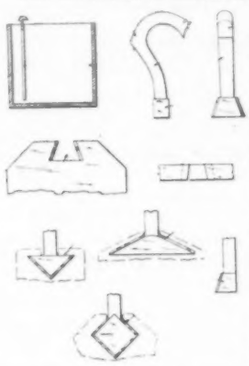
1,036,309. August 20, 1912. Tube-Rolling Mill. Adolf Alexander Karl Nolvak, Bons-on-the-Saar, Germany.

In tube rolling mills in which the tube mandrel is drawn out of the tube by the retreat of the mandrel slide, considerable time is ordinarily lost in the substitution of a cooled mandrel for one in use which has become overheated during the progress of the work, since the cooled mandrel is now taken by hand from a cooling trough and laboriously positioned and secured to the slide-clamp. The present invention aims to simplify this labor and thereby to increase the efficiency of the mill, by providing a rising and falling carrier for the mandrels as shown in cut, which not only receives the hot mandrel from the slide, but provides a cooled one ready for installation, which it has lifted from a cooling trough located under the mandrel slideway. By this means the substitution of the cooled for the heated mandrel is much expedited as well as the accompanying labor much reduced.



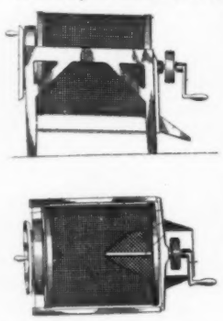
1,036,654. August 27, 1912. Anode Support. Clarence E. Leffel, of Meadville, Pa. Assignor to the Spirella Company, of Meadville, Pa., a corporation of Pennsylvania.

The invention is intended to provide an anode support whereby the hooks need not be scrapped, but can be used repeatedly, thereby resulting in a large saving in the cost of operation of these electro-plating plants. In carrying out the invention the anode is provided at its upper end with a pair of upstanding projections or wings in the same plane as that of the anode plate, as shown by the cut. These projections or wings are provided with inclined or slanting inner edges to form a dove-tailed socket, which tapers in both directions; that is, not only tapers downwardly from the top to the bottom of the socket, but also from one side to the other of the socket. The hook is provided in its lower end with an enlargement or head, which is similarly tapered in two directions, increasing in width downwardly and being wider at one end than at the other, thereby producing a portion somewhat wedge-shaped. This tapered portion is inserted in the socket at one side of the anode and is driven tightly thereinto, thereby producing not only a firm mechanical support for the anode, but providing an almost perfect electrical contact, about equally as good as if the hook were cast integral with the plate. The connection, however, is such that when the plate is exhausted the hook can be driven out of the same and used on a new plate.



1,037,371. September 3, 1912. Sand Sifter. Henry Tscherning, of Freeport, Ill. Assignor to Arcade Manufacturing Company, of Freeport, Ill., a corporation of Illinois.

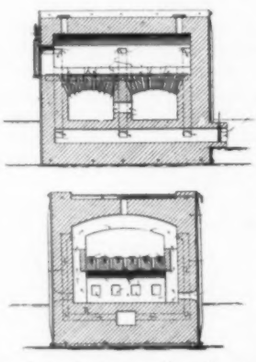
The object of this invention is to provide simple, compact and inexpensive apparatus operable by power, by one man, or by two men for rapidly sifting sand, particularly such sand as is used for molds suitable for casting metal. With these ends in view inclined, concentric, spaced, tubular screens are revolubly mounted in a suitable frame, as shown in cut, and arranged to receive at the higher end and in the inner screen, material to be sifted, and to discharge the finer material laterally, while the portions which fail to pass the screens are allowed to escape at the lower ends of the several screens, which are successively finer in passing from within outward.



1,037,665. September 3, 1912. Furnace for Annealing, etc. Walter S. Rockwell, New York, N. Y.

This invention relates to an improvement in furnaces for annealing, tempering, enameling, baking and other heat treatments of metals or other materials.

The object of the invention is to provide a construction in which large quantities of metals or other materials may be uniformly heated or subjected to any other heat treatment necessary in the course of manufacture. A further object is to provide a construction, shown in cut, which will permit the radiant heat rays, as well as the hot gases of combustion, to rise in free, natural, unobstructed flow from the combustion chamber into practically every part of the heating chamber and to impinge directly upon the lower side or bottom of the charge of material to be heated, thereby raising the temperature of the charge and the entire heating chamber uniformly to the desired degree, the top equalling but never exceeding the bottom,



INDUSTRIAL

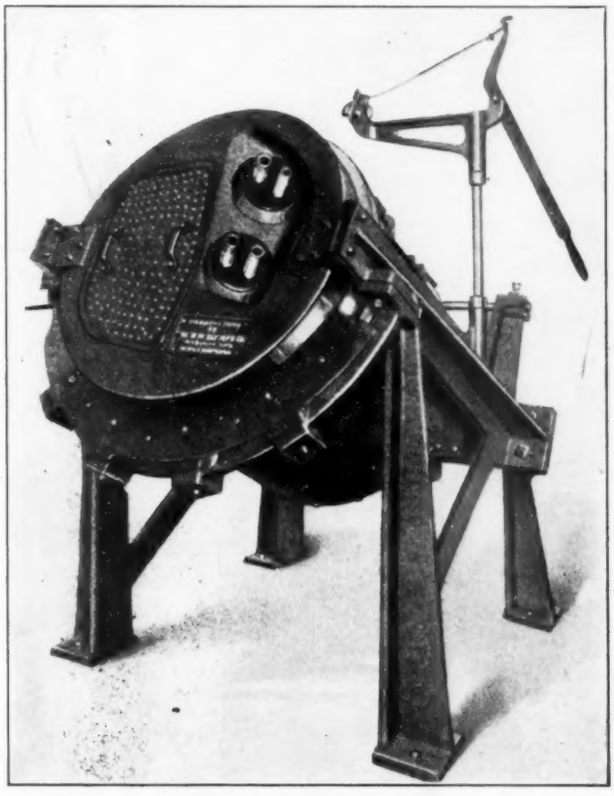
NEW AND USEFUL DEVICES, MACHINERY AND SUPPLIES OF INTEREST TO THE READERS OF THE METAL INDUSTRY.

NEW MACHINES AND APPLIANCES DEVOTED TO THE FOUNDRY

A Collection of the Most Improved Devices Exhibited at the Buffalo Exhibition of the Foundry and Machine Exhibition Company.

SLY SAND BLAST MILL

The Sly Sand Blast Mill was shown for the first time at the Buffalo exhibition. The cut herewith shows the general construction of the Sand Blast Mill, which is 36 inches in diameter, 36 inches deep and requires only 3 horse-power to operate. There are no obstructions inside of the mill so that castings will be broken, nor can the castings break any part of the mill. The



THE SLY SAND BLAST MILL.

head of the mill is stationary and the barrel revolves making 2½ to 3 revolutions per minute. This machine is very substantially built, is thoroughly balanced with the adjusting rollers to compensate for any wear and has a large substantial bearing for thrust and rigidity. This machine weighs 5,100 pounds.

Each mill is provided with two sand blast nozzles. There is absolutely no wear on the sand or air hose, as the sand falls by gravity and is mixed with the air at the nozzle. The operation of loading and unloading of the mill requires just the lifting of the door plate by mechanism provided as shown in cut, and turning the mill one half way over so as to deposit the clean castings into a truck to be provided beneath the machine, then by turning the mill around so that the door is uppermost castings can be loaded from an overhead trolley. By the aforesaid lifting device the cover can be readjusted on the mill when it is ready for the next operation. The time that elapses, namely, 6 to 10 minutes enables the operator to remove castings cleaned in truck and prepare the next load, making this strictly a one man machine. The barrel is operated from the front by a clutch lever and in this way the mill can be started and stopped at any desired position. Each nozzle is controlled by a separate air valve and the flow of sand for both nozzles is controlled by a lever. The mill can handle a charge of 300 to 500 pounds of thin light castings, while on heavy work it will take care of from 500 to 1,200 pounds per charge. The time of sand blasting varies from 6 to 10 minutes, operating at a pressure of 40 pounds. This machine and others of the same type are manufactured by the W. W. Sly Manufacturing Company, Cleveland, Ohio.

VALVELESS SAND BLAST MACHINE

The Cleveland-Wadsworth Valveless Sand Blast Machine takes its name from the fact that there is no sand-operating valve. A trap of simple and peculiar design, screwed onto the

CLEVELAND-WADSWORTH VALVELESS SAND BLAST MACHINE.

bottom of the sand tank, does it all. The air for forcing the sand is attached to this trap and is controlled by the one main operating lever. One movement of the one main valve shuts off the air and stops the flow of sand.

It will be noted that the only movable operating parts are the air adjusting valves and the sand filling valve, which all use air only. Removing the filling valve, bottom trap, inlet nipple, all attached to the outside of the tank, strips the tank completely. Hand holes, cleaning holes and other similar devices are not necessary with this machine, since everything essential to its operation is attached to the outside.

The pressure is graded to suit the metal to be cleaned, as shown by the following:

Brass and aluminum	10 lbs.
Cast iron	20 lbs.
Steel	40-60 lbs.
Steel plates, rails, structural shapes	10-40 lbs.

The makers build three standard sizes of machines, as shown in cut, measured by the size and capacity of the tank:

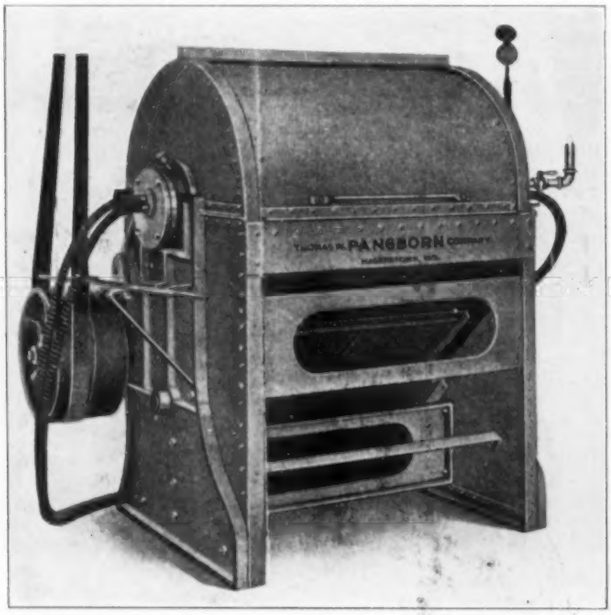
500 lbs., 24 x 24 in., list price	$275.00
1000 lbs., 30 x 30 in., list price	325.00
2000 lbs., 36 x 36 in., list price	375.00

Special sizes will be built to order by the manufacturers, the J. D. Smith Foundry Supply Company, Cleveland, Ohio.

PANGBORN SAND BLAST

The Thomas W. Pangborn Company, Hagerstown, Md., had a very interesting new machine at the exhibition, which is the Pangborn rotary blast machine shown in cut. In this machine sand and air for the blast are led through separate passages in a manifold, and the nozzles are located near the center line of the barrel, the center nozzle being directed radially toward the work, while the other nozzles are given a divergent direction, so that the blast spreads over the entire charge of work in the drum and reaches the pieces which lie in the ends equally as well as those in the center.

In addition to this advantageous location of the sand blast nozzles, the entire manifold is pivoted at its ends, so that it is

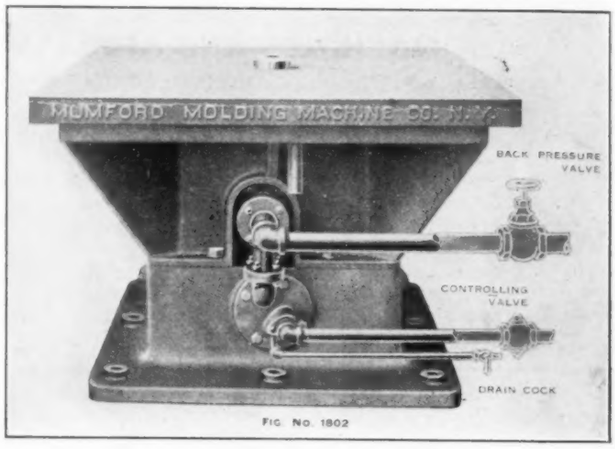


THE PANGBORN ROTARY SAND BLAST MACHINE.

instantly adjustable with the machine in operation, to direct the nozzles upon the work at any angle from 15 to 60 degrees from the vertical. This feature, exclusive in this machine, adapts the machine for handling large or small charges, and for work of different characters as regards the angle at which it rolls in the drum. There is no mechanism of any kind for the feeding or regulation of the sand flow inside of the barrel itself; all of this is external and in plain sight at the back of the machine. Further particulars may be obtained by writing for bulletin 102, sheet number 2.

MUMFORD JOLT RAMMER

The line of Mumford Jolt Rammers shown at the exhibition by the Vulcan Engineering Sales Company of Chicago, Ill., showed a great improvement in construction. One particular feature of the machines is the patented valve. This is made of solid hardened steel in one piece with no springs and exposure



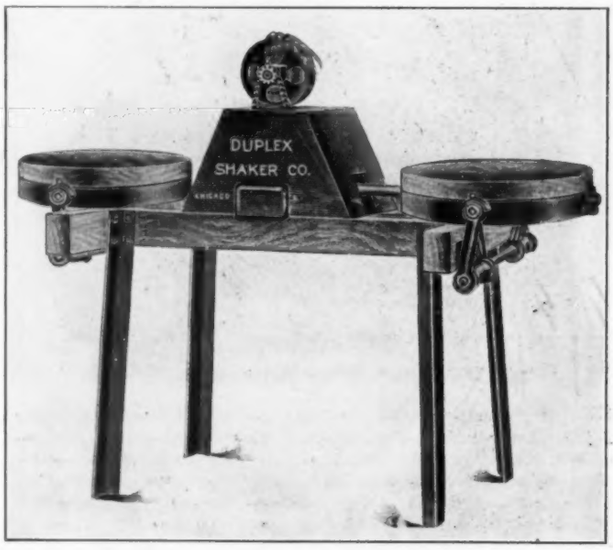
THE NEW MUMFORD JOLT RAMMER.

to wear. The table of this machine has laminated steel landing surfaces. There is no over-hang and therefore only one cylinder is required for operation. The jolt rammer here shown is manufactured in nineteen sizes by the Mumford Molding Machine Company and run from a three inch jolt with a capacity of 350 pounds, at 80 pounds pressure to a 32 inch jolt and a capacity of 39,000 pounds. These machines are also equipped with a pattern draft attachment. Circulars will be sent upon request.

DUPLEX SHAKERS

The sand shaking machine shown in the cut was one of the most interesting things shown at the exhibition.

Duplex Shakers are two shakers in one, constructed by placing



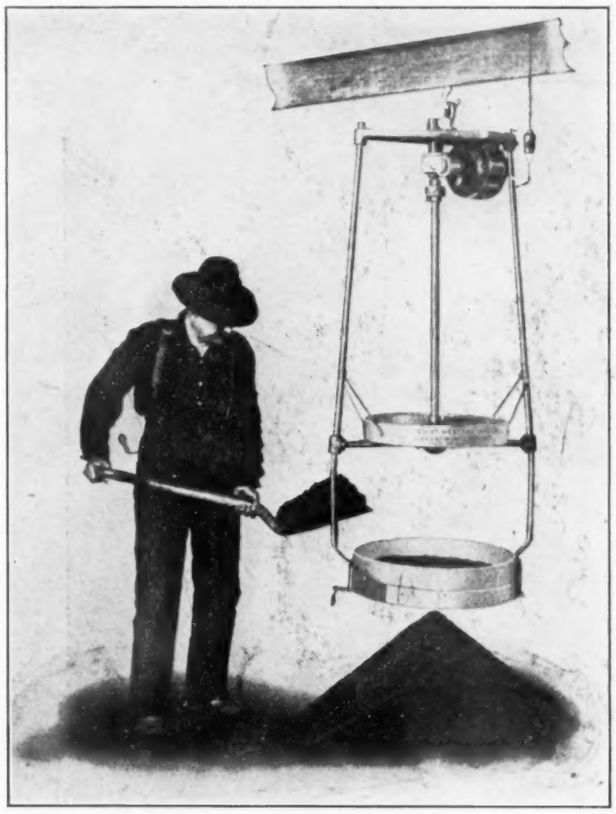
THE DUPLEX SAND SHAKER.

two riddles opposite each other connected to a crank shaft. This balances the machine, making it run smoothly with only a slight vibration, allowing a much greater speed. The crank is run by a high speed machine chain-driven from a low speed motor. The gears are special cut, made to prevent the chain from running off.

It is claimed by the makers that the Duplex shaker will cut down costs in core room and facing department. They say: "The Duplex Shaker is not equalled for quick work in the core room. It takes two men to keep the machine going to its capacity. In making facing and riddling molding sand, it keeps one man busy to keep the shaker going with small mesh riddles." As will be seen the design of the shaker is extremely simple, all parts exposed to dirt are covered and the motor is elevated above the riddles. The Duplex shaker is manufactured by the Duplex Shaker Company, Chicago, Ill.

GYRATORY FOUNDRY RIDDLE

An ingenious foundry device shown at the exhibition was the Combs Gyratory Foundry Riddle. This machine as shown in cut, is portable and weighs less than 300 pounds and it has been demonstrated that it can be used in from one to twenty different parts of the foundry or core room, and the sand screwed at the mold or on the floor as desired. The machine is driven by an electric motor of ⅓ horsepower, located high above and away from the sieve. The riddler can be hung from anything



THE COMBS GYRATORY FOUNDRY RIDDLE.

that will support 100 pounds in any part of a building or yard. All that is necessary then is to conduct the electric current through an ordinary camp cord to the machine.

It is claimed that the machine will sift more sand than one man can shovel into it. It will sift more than ten times as fast as can be sifted by hand. The sieve is 20 inches in diameter and is held in place by a specially designed spring clamping device that enables the operator to remove the sieve in an instant for cleaning. After cleaning it can be again placed in the machine in a moment. The Gyratory Riddle is manufactured by the Great Western Manufacturing Company of Leavenworth, Kansas.

TRISALYT

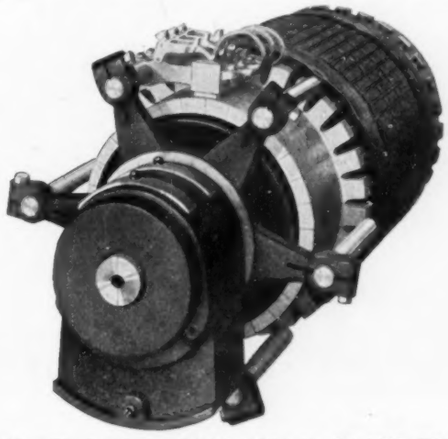
One of the first concerns to recognize the close connection between the founding and finishing of metals was the Roessler & Hasslacher Chemical Company of New York, who had an exhibition at Buffalo of Trisalyt. The booth of the company was very artistically arranged and samples of Trisalyt and its results in plating metals attracted great attention. One of these in particular was a steel welded chain in a three foot length which had been brass plated in a Trisalyt bath in twenty minutes as compared with thirty-five to forty-five minutes by the regular method. Trisalyt is, as has been told in THE METAL INDUSTRY, February, 1912, a triple salt of copper, zinc, gold and silver combined in a single salt of great purity.

With these salts it is claimed a bath can be prepared practically free from impurities, a result which could not so far be obtained due to the use of commercial chemical salts which contain more or less impurities. The most objectionable of these impurities are chlorides which have long been a source of trouble to the plater by forming precipitates and thus shortening the life of the bath. Then, too, with the use of Trisalyt, errors caused by the addition of incorrect proportions of the ingredients are entirely eliminated, as Trisalyt is invariably of the same composition, thus making it possible to readily control the chemical and metallic contents of the bath. For this reason they are especially recommendable for brass and bronze baths, which have long been a source of trouble and annoyance to the plater.

Copper	Trisalyt	always	contains	24-25%	Metallic	Copper
Zinc	"	"	"	18-19%	"	Zinc
Gold	"	"	"	40%	"	Gold
Silver	"	"	"	30%	"	Silver

EXCELL-ALL DYNAMOS

The Excell-All plating dynamo shown by Bennett-O'Connell Company, of Chicago, Ill., at the exhibition, attracted a great deal of attention and was one of the features of the show. One of the great points made by the makers of this machine was the steady voltage maintenance of the machine when running at full load with no over-heating. This feature, it is claimed, is due in part to the important change in the type of brush holder. The brush holder shown in the cut is of the radial type, and by the use of a composition brush of very low resistance the builders are enabled to set the brushes radially



SHOWING THE RADIAL BRUSH BORDER OF THE EXCELL-ALL DYNAMO.

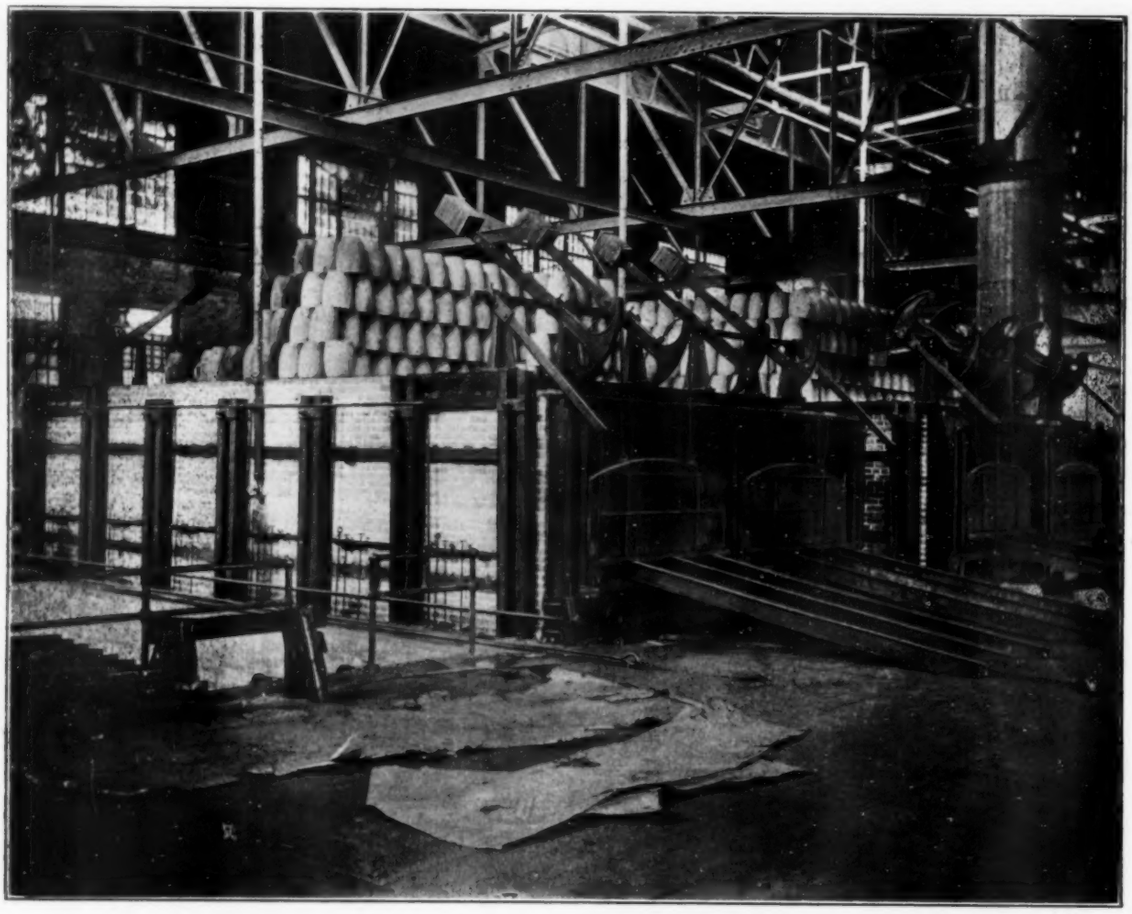
on the commutator with a nice sliding movement of the brush in the holder, as shown in Fig. 2, this brush being actuated by a spring contact on the top of the brush, which gives an even tension until the brush is entirely worn out. The design of this brush and brush holder is such that the sliding contact is not depended upon to conduct the current from the brush to the holder, but a very heavy flexible connection is used which connects the brush with the brush holder and makes the contact of very low resistance and consequently reduces heating here.

Another great feature of this brush is the very high conductivity of the brush; in fact, the brushes commutate a current of 150 amperes to the square inch of contact. Still another great feature of this brush is that as it wears down it never leaves or shifts from the proper point of commutation. It never requires retrimming nor readjusting as the old type of brushes require from time to time, thereby reducing the care of the dynamo to a minimum. The Excell-All Dynamos were described in THE METAL INDUSTRY for October, 1911.

ROCKWELL UNDERFIRED FURNACE

The type of annealing furnace shown in cut, and designed and installed by the W. S. Rockwell Company, 30 Church street, New York, has come into general use within the last few years and has proven highly satisfactory, especially for general rolling mill work in the manufacture of brass, copper, German and sterling silver, etc. More than eighty of these underfired furnaces have recently been built and put in successful operation in some of the largest brass and copper rolling mills. German and sterling silver works, saw works, chemical works, tube mills, etc. Many of them have heating chambers from 5 to 8 feet wide by 24 to 35 feet long.

The trouble has been to design a structure and to find a material which would at the same time meet the high temperature requirements of an arch over a combustion chamber and the flat floor of an annealing chamber, such arch being liberally perforated for the passage of heat and the floor having to endure the travel of charges of many thousands of pounds over its surface. Fortunately, after some disappointment this has been accomplished. The underfired principle embodied in these furnaces has just been covered by a patent granted to W. S. Rockwell, a notice of which will be found in the PATENTS department of this issue of THE METAL INDUSTRY.



AN INSTALLATION OF A ROCKWELL UNDERFIRED FURNACE IN A BRASS MILL. SHOWING ALSO THE STORAGE PLACE FOR CRUCIBLES.

UNIFORMITY OF TEMPERATURE.

Experience has shown that it produces a more uniform temperature throughout the annealing chamber than any other type of annealing furnace. And this is the most important function of an annealing furnace. The reason for this uniformity is that the several combustion chambers are equally distributed directly *under* the entire annealing chamber and the annealing chamber floor is so perforated that the heat can rise gently to direct contact with the bottom of the annealing pan carrying the metal to be annealed. This perforation is so complete as to absolutely saturate the floor of the annealing chamber with heat and, of course, the bottom of the charge to be annealed. As it is the nature of hot gases to rise and as sufficient room along the sides of the chamber has been provided for the escape of these hot gases to the upper parts thereof, it follows that the top of the charge is annealed at the same time as the bottom and therefore the entire charge is annealed uniformly. As the hot gases cannot pass the charge and attain a higher temperature above it, the top of the charge can never be heated higher than the bottom. Exactly the reverse of this condition has long prevailed in all the old or over-fired methods of annealing.

SOLDERING ALUMALOYD SHEETS

Dr. F. Reinhold, of Newark, N. J., has discovered a method of using ordinary solder in joining alumaloyd sheets. He says that after trying all kinds of aluminum solder without success the idea was suggested to him to use ordinary solder. He states: We simply take a flux, which we found worked all right, and this can be gotten from us or from any jobber of standing. We absolutely guarantee, that alumaloyd sheeting, soldered with our flux, and any soft solder, will not come apart, when exposed to the air or to dampness, also to influence of such liquids, which will stand unactive towards alumaloyd. In other words, we claim, that nothing will attack the joint, which does not attack the alumaloyd. The soldering is very simple, and is done by means of an ordinary soldering iron. If in some cases riveting has to be done, the sheets should be riveted together first,

then the soldering can follow. The solder will flow through any lap joint. For further particulars address Dr. F. Reinhold, 53 Demarest street, Newark, N. J.

NEW ANODE HOOK

The anode hook here shown is a recent invention upon which a patent has just been granted to C. E. Leffel, superintendent of The Spirella Company of Niagara Falls, N. Y. In telling about the book Mr. Leffel says: "In our plating department we were using the regular cast hook, and in a large institution such as we have, we soon accumulated a number of hooks and found that we could not sell these for anything near what we paid for them, so decided to work out a hook which would be very simple in its design as well as construction, and one that

THE NEW LEFFEL ANODE HOOK.

would be practical in every respect, and after using this hook for over a year we found that we could not dispense with it, therefore, we made application for a patent which has been granted." The patent specification will be found in the PATENT columns of this issue of THE METAL INDUSTRY. These hooks are cast 40 per cent. copper and 60 per cent. nickel which gives a metal of superior conductivity, as well as a malleable casting which does not break readily. The hooks are interchangeable in the anodes, and can be used practically in any style or make of electro plating anode. As will be noted the lug part of the hook tapers so that it dovetails into the opening in the anode and makes a perfect fit and connection and a very rigid hook after being placed properly in the anodes.

NEW SOLDERING DEVICE AND IMPROVED GAS BURNER

In our August issue we gave an illustration and description of a soldering tool which was operated by air pressure, or an auxiliary blower. Since calling our readers' attention to this tool, we have discovered another soldering device, which the manufacturers claim is not only more practicable, but very much simpler, as it does away with the auxiliary air pressure, or blower, making it an ideal tool for the shop. The makers call it the automatic blast soldering tool.

The accompanying illustrations show the complete tool ready for use. It consists of a specially constructed double air inlet blue burner (patented) on one side of which a handle, and the other a copper point is adjustably attached. The end of the handle is attached to a gas hose, and the gas passes through the handle, is mixed in the special chamber and generates a tremendously hot and powerful blue blast (without the aid of an auxiliary blower), which plays on the underside of the copper, bringing the soldering point to the desired temperature in a few minutes, keeping a continual steady heat.

This small flame is protected by a guard and can be regulated as desired. As the gas outlet is extremely small, it requires but a very small tubing, which does not inconvenience the operator in the least, in fact, it helps to balance the tool, which makes it so popular with the users, particularly those who do continual work. Any kind of tubing can be used, but the manufacturers recommend the flexible metallic tubing, ⅛ inch diameter, which they also make, and which is not only lighter than rubber, but does not kink, swell or rot and lasts many times longer. The tubing is preferably attached to the gas on the underside of the bench. (See Figs. 1 and 2.)

As the flame is constant, the tool does not require as large a copper as the old style pot, half the weight doing the same work. Also only one copper is necessary to an operator, and thus the extra copper which is lying in the old style furnace getting heated, is saved, which alone means an enormous reduction in the copper bills. The coppers unlike those described in our last issue, using the auxiliary blower, are not hollow, but are solid, thereby enabling them to be forged the same as the old style. The life of one copper is longer than a year of continual usage, and the price varies according to the market. In fact, most of the large manufacturers now using these tools, make their own coppers out of bar rod. Coppers are made in various shapes—pointed, chisel, hammer and hatchet.

The numerous advantages of this style of tool can be readily seen, as the feature of having the flame strike the bottom of the copper, and it being constant, must mean a great saving in coppers, gas and time. The flame is a perfect blue Bunsen,

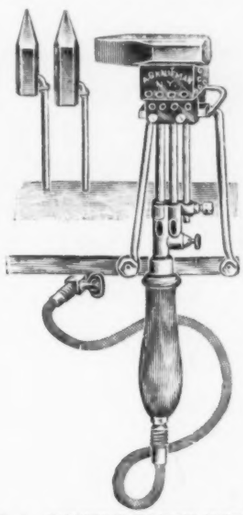


FIG. 1. DOUBLE TORCH WITH HATCHET COPPER.

FIG. 2. SINGLE TORCH.

and being very small, does not interfere with the operator. It plays on the underside of the copper, therefore does not burn, blacken or corrode the point, thus doing away with the constant reforging, retinning and refiling. It is readily understood how much saving in solder, copper and acid is made with this wonderful and simple tool. Of course the largest items to be

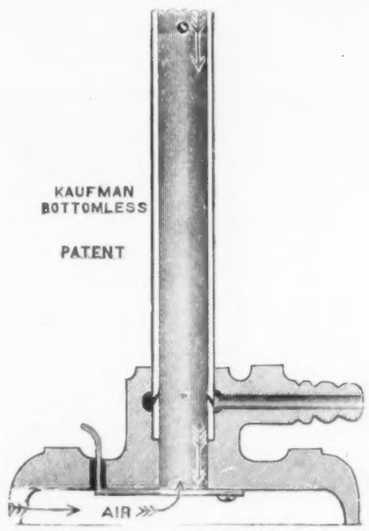


FIG. 3. THE KAUFMAN BOTTOMLESS BURNER.

considered are time and the quality and quantity of the work turned out. Also there is no heat wasted and no odor in the shop. They can be placed anywhere, depending upon the length of the tubing, and take up but very little room, no more than an ordinary soldering iron. The tool can also be used

for other purposes besides soldering, for example (by removing the copper) as a brazing torch, a free flame burner, or other similar uses.

The tools are made in several sizes, with single and double flames, and can be adapted to almost any class of work, whether large or small. The single flame tool is made in five sizes, the coppers varying from two ounces to three pounds. The double flame tool is made in two sizes, the coppers weighing one pound and one and a half pounds. The gas consumption averages about 15c. per month, working eight hours a day, figured at gas being $1 per thousand feet. Either machine, coal or natural gas can be used.

This soldering tool, known as the Kaufman automatic gas blast soldering tool, is made by the A. G. Kaufman Manufacturing Company, 83 Reade street, New York City, who among other gas appliances, also manufacture the Kaufman automatic shut-off or kick valve, a gas saving device for blowers, which we described in our July issue and which is illustrated on another page of this issue. They also make a bottomless burner, an improvement on the old style Bunsen burner, which they claim is the most powerful and perfect burner ever placed on the market, as it has a primary and secondary air supply, which makes it adaptable for all pressures and qualities of gases. The most important feature of this burner is that it is bottomless, and particles such as solder, filings, chemicals, dirt, etc., fall directly through it without interfering with the flame, therefore there can be no clogging up and flash backs are impossible. The admission of air through the bottom is controlled by a lever-slide, which by moving from right to left produces an oxidation or reduction flame, as the occasion demands. The gas consumption is from two to five cubic feet per hour. They are made in two sizes. This wonderful Bunsen, as shown in the accompanying illustration, Fig. 3, is filling a long felt want among those manufacturers who use this class of burner.

The manufacturers are specialists in gas burning and saving devices, and state that they would be pleased to give advice as to mechanical features, labor and fuel saving devices, to manufacturers and all readers of our paper. Also would be pleased to send their literature upon request.

Associations and Societies

DIRECTORY OF AND REPORTS OF THE PROCEEDINGS OF THE METAL TRADES ORGANIZATIONS.

NATIONAL ASSOCIATION OF BRASS MANUFACTURERS

President, Theo. Ahrens, Louisville, Ky.; Commissioner, William M. Webster. All correspondence should be addressed to the Commissioner, William M. Webster, 1112 Schiller Theater Building, Chicago, Ill. The objects of the Association are to promote in all lawful ways the interests of firms engaged in the manufacture of brass goods. Meets every three months. Each meeting fixes the place and date of the meeting to follow, consequently there is no stated place. It has been customary for the Association to hold its Annual Meeting in New York City in December.

Commissioner Webster reports that this association held one of the most successful meetings of the year at the King Edward Hotel, Toronto, Canada, on Tuesday and Wednesday, September 10 and 11. Among the more important things that transpired at the meeting was the standardizing of the weight of the regular competitive ½-inch I. P. Compression bibb to 13 ounces to take effect on January 1, 1913. Also adopted 2½ inches as the standard for base of all basin cocks shown in the Official Catalogue, and requested the commissioner to take up with the manufacturers of the different makes of lavatories, the question of making a standard boss, button or raised part 3 inches in diameter.

From the standpoint of accomplishments it was the most successful meeting that has been held for a long time. A poll of the meeting showed that practically every member in attendance was busy, in most cases with business enough to carry them along for some time, with prospects good and at prices reasonably satisfactory and with the upward tendency of the raw materials in the sheet, rod and tube line as well as the copper, lead and other metals entering into the manufacture of goods, it was plainly evident that manufacturers had arrived at the time where they could insist upon a reasonable price and fair profit and get it, and that is what the general concensus, as expressed by the individual members, believed can be accomplished and without any great trouble or difficulty. Automobiles were provided and very interesting trips made to the Canadian plant of the Standard Sanitary Manufacturing Company and the United Brass & Lead, Limited.

It was decided to hold the next meeting, which will be the annual meeting, in New York on December 10 and 11, at which time President Ahrens and Commissioner Webster were appointed to make suitable arrangements for same. Owing to the strong financial condition of the treasury the commissioner was instructed to reward each member who attends the meeting in New York the sum of $10.

ELECTRO-PLATERS' ASSOCIATION

President, Richard H. Sliter, Jersey City, N. J.; Recording Secretary, A. J. Stremel, Brooklyn, N. Y. All correspondence should be addressed to the Secretary-Treasurer, Royal F. Clark, 246 Fulton avenue, Jersey City, N. J. This is an educational society, the objects of which are to promote the dissemination of knowledge concerning the art of electro-deposition of metals in all its branches. Meets at Grand Opera House Building, 309 W. 23d street, New York, on the fourth Friday of each month, 8 p. m.

The regular monthly meeting of this association was held on the 27th of September, and four applications for active and one for honorary membership were acted upon favorably. The chief speaker was Charles H. Proctor, past president of the association, who gave an interesting account of his recent visit to the International Congress of Applied Chemistry, where he represented the association. A recess was announced during the evening during which the members collected in groups and discussed various subjects connected with the art, some of which were "the cause of black silver anodes, preparations for the stopping-off of deposits, antique finishes on car trimmings, and the use of "Prometheus" salts in making up nickel baths." The next meeting will be held on October 25th.

The September meeting of the Philadelphia branch was also held on the 27th, and one applicant was elected to membership. A committee was appointed to arrange for a sociable. Messrs. Benoliel and Wells spoke on Electro-Chemistry; President Clement exhibited samples of black nickel deposits and Mr. Heck, barrel bright brass plating.

INSTITUTE OF METALS

President, Professor W. Gowland, F. R. S.; Treasurer, Professor Turner, M. Sc.; Secretary, G. Shaw Scott. All correspondence should be addressed to the Secretary, G. Shaw Scott, M. Sc., Institute of Metals, Caxton House, Westminster, S. W., London, England. The objects of the Institute are for the educational welfare of the metal industry.

The annual autumn meeting of the Institute was held in London, September 25 and 26, at which the following papers were read: "The Solidification of Metals from the Liquid State," by

G. T. Beilbey, R. R. S.; "Autogenous Welding by Means of Oxygen and Acetylene of Copper and Its Principal Alloys, and of Aluminum," by Dr. F. Carnevali"; "The Structural Resolution of the Pure Copper-Zinc β Constituent Into $\alpha + \gamma$" by H. C. H. Carpenter, M. A., Ph. D.; "The Effect of Other Metals on the Structure of the B Constituent in Copper-Zinc Alloys," by H. C. H. Carpenter; "The Effect of Temperatures Higher Than Atmospheric on Tensile Tests of Copper and Its Alloys, and a Comparison with Wrought Iron and Steel," by A. K. Huntington, F. I. C.; "The Influence of Impurities in 'Tough-Pitch' Copper," by Frederick Johnson, M. Sc., A. I. M. M.; "The Influence of Oxygen on the Properties of Metals and Alloys," by E. F. Law, Assoc. R. S. M.; "Intercrystalline Cohesion in Metals," by Walter Rosenhain, B. A., D. Sc., and Donald Ewen, M. Sc.; "On the Annealing of Coinage Alloys," by Thomas Kirke Rose, D. Sc.; "The Joining of Metals," by Alex. E. Tucker, F. I. C.; "Oxygen in Brass," by Professor Thomas Turner, M. Sc., of Birmingham University.

ITEMS OF INTEREST TO THE INDIVIDUAL.

D. WILLIAM WADE

D. William Wade, treasurer of the Chadwick-Boston Lead Company, Boston, Mass., has recently been elected president of the Paint and Oil Club of New England. Mr. Wade entered the employ of the Boston Lead Manufacturing Company in 1882 as a boy, completing thirty years service last August. In 1901 this company was consolidated with the Chadwick Lead Works, under the present name. After serving in various capacities Mr. Wade was several years ago elected treasurer of the company. He has twice served on the Board of Directors of the Paint and Oil Club, and is also a member of several clubs in the vicinity of Boston, including the Boston City Club and the Wollaston Golf Club.

D. W. WADE.

Victor C. Lassen, it is announced, has severed his connection with the Vanadium Metals Company and the Victor Metals Company, both of Pittsburgh, Pa.

Frederick Sneydl, for thirty-two years foreman of the plant of the T. W. Adams Company, manufacturing jewelers, Newark, N. J., has resigned and gone to Los Angeles, Cal.

George R. Coates, president of the Genesee Metal Company, Rochester, N. Y., and his son Raymond H., chemist for the same company, were recent visitors to the office of THE METAL INDUSTRY.

John J. Burke, formerly connected with the Waldorf-Astoria Hotel and L. Plaut & Company, New York, as foreman plater, is now employed as demonstrator and salesman in the Trisalyt department of the Roessler & Hasslacher Chemical Company, New York.

William Schneider, who is still renowned as a plater though he has retired from the plating room to the sales road, proved to be a life-saver at the recent Buffalo convention. William S. was the first assistant at the Roessler & Hasslacher booth and opposite them was an exhibit devoted to moving foundry machinery. An exhibitor running one of the machines was injured and the "Great Bill" rushed to his rescue and was one of the first aids in pulling the man out of danger and in summoning an ambulance.

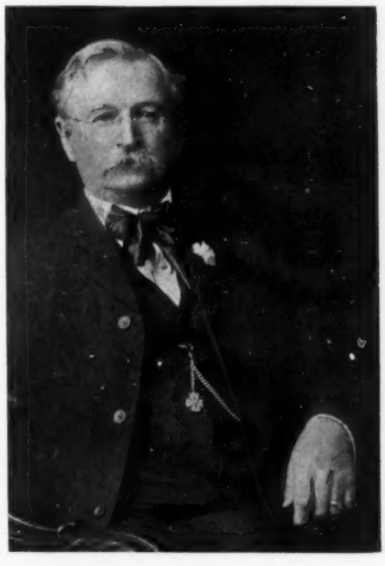
Charles S. Morse, the well-known brass and copper expert, who was so long intimately connected with the metal industries of Waterbury, Conn., as superintendent of the Benedict & Burnham Manufacturing Company and other companies, and lately identified with the National Conduit & Cable Company of Hastings-on-Hudson, N. Y., and 41 Park Row, N. Y., where he designed and put into operation the model brass rolling mill tube, wire and rod mills for the Standard Brass & Copper Company, has been appointed general superintendent for the Baltimore Tube Company, Baltimore, Md., to erect and organize their plant but not to operate it. A description of the plant of the National Company was given in the April issue of THE METAL INDUSTRY.

Henry M. Lane, formerly editor of *Castings*, published by the Gardiner Printing Company, Cleveland, has established an Office and Core Testing Laboratory, in Detroit, Michigan. To carry on the work, he has organized a company known as The H. M. Lane Company, with offices at 18 Piquette avenue East, Detroit, Mich. Olin F. Flumerfelt, Chemical Engineer, is associated with Mr. Lane in the company and they will conduct a general foundry and metallurgical consulting engineering business, making a specialty of core room work.

DEATHS

GEORGE W. WELLS

George W. Wells, the president of The American Optical Company, died at his home in Southbridge, Mass., of neuritis, on September 30. Mr. Wells was born at Woodstock, Conn., in April 15, 1846. After spending his early life on the farm and teaching school he went to Southbridge when he was eighteen years old and became connected with the optical shop of Robert H. Cole & Company, where he devoted himself to the designing of machinery for the manufacture of optical goods. Mr. Wells next became identified with the American Optical Company at its formation in 1869, where he was secretary. He continued with this concern up to the present time, serving as secretary and president, which latter office he held at the time of his death; one of his sons having been made treasurer in 1908.



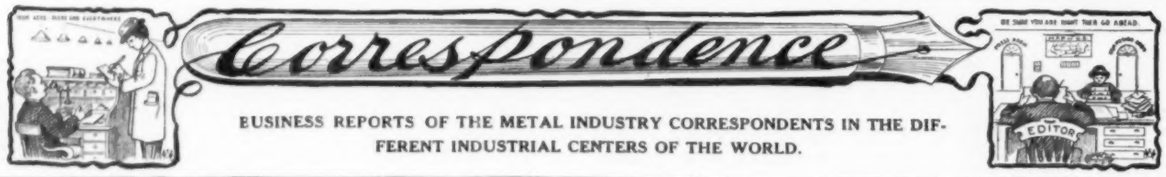
GEORGE WASHINGTON WELLS.

Mr. Wells was the most prominent business man in Southbridge and was connected with practically

all of the industries of that town, notably as president of The Harrington Cutlery Company, the Central Mills Company and the Southbridge National Bank. He was also connected with a large number of industrial organizations and a member of numerous social and political clubs throughout the State. He leaves three sons and one daughter.

Edwin C. S. Hunt, connected with the sales department of the Hoyt Metal Company at St. Louis, Mo., died September 19, after being ill for four months. Mr. Hunt was 57 years' and leaves a widow.

As we go to press we learn of the death, September 25, 1912, of William H. Corbin, vice-president Joseph Dixon Crucible Company, Jersey City, N. J.



BUSINESS REPORTS OF THE METAL INDUSTRY CORRESPONDENTS IN THE DIFFERENT INDUSTRIAL CENTERS OF THE WORLD.

WATERBURY, CONN.

OCTOBER 1, 1912.

Business is so brisk among the factories of Waterbury engaged in the manufacture of metals and metal goods that one cannot remember during working hours that there is a political campaign in progress. This activity is unprecedented in a Presidential campaign year, and the best feature of it all is that there is plenty of business coming in and orders are being filed steadily for filling after the first of the year. It is so good that it would not be surprising if the totals at the end of the year should show a new high record. This present prosperous condition is not a momentary rush. It is a fine healthy result of growing business and increasing volumes of orders which may be seen to have begun some two years or more back, and in the cases of some of the factories as far back as two and a half years. It was halting and uncertain at first, coming in fits and starts. Some works were kept going this way, however, so that it was necessary to operate good sized crews over night as well as during the day, and in the Chase Rolling Mills, for instance, there have been night gangs at work for over two years. Scovill's also has enjoyed such a condition. The American Brass Company, on account of its larger mills and facilities have found it unnecessary most of the time to work day and night forces, but of late there have been plenty of night hands employed in its shops here and in other cities. The first of the present year saw business still hesitating, but it has kept gaining in volume gradually and steadily and is now at its best since the prosperous times before the financial panic of 1907.

It is unfortunate that the city is up against a genuine water famine at this time, owing to the low supply in the city's reservoirs, for the factories are heavy consumers of water, both for power, washing and drinking purposes. By a recent city edict the elevators operated by water power were ordered stopped in order to conserve the remaining supply, and until heavy rains have occurred on the city's watershed there will be considerable inconvenience caused by this order. With characteristic foresight and a splendid spirit of co-operation the manufacturers have risen to the occasion and are doing much to relieve the inconvenience their employees and the public are under owing to the water situation. Those owning property on which there are springs have put men at work furnishing spring water for use at the factories as drinking water for their employees and have granted their employees the privilege of getting their supplies for household use at the wells or springs on their land. As the water supplied to the lower portion of the city, which is the more densely populated is not fit to use for drinking or cooking purposes this is a great boon to the shophands and their families. The Chase shops have voluntarily stopped using the city water that runs to their plant, thereby adding hundreds of gallons a day to the remaining available supply for families. This may be the last year of such trouble as the great new reservoir is so far advanced that the dam will be available for storing water a good part of the winter and spring and the situation will be tided over more easily hereafter, even with a slightly drier season next summer than that of this year.

During the past week work was begun on the new office building of the American Brass Company in this city, which will be located directly opposite the new depot and will be a fine modern business building. On its completion the offices in the various plants throughout the city will be brought under one roof and there may be considerable saving effected by consolidating them in this manner, although the real purpose of the company is to make greater efficiency possible.—F. B. F.

PROVIDENCE, R. I.

OCTOBER 1, 1912.

That business is decidedly better all along the line is the general verdict, notwithstanding the political agitation that is going on throughout the country with the approach of the presidential election. Encouraging reports are coming to the manufacturers in this section from all parts of the West and South, and it is believed that the next few months are to be harvest ones. This is especially the case with the manufacturing jewelers with whom all staple lines are unquestionably selling as well this year as in years past. It is very noticeable, however, that fads are less in evidence than heretofore.

The Workmen's Compensation Act which was passed at the last session of the General Assembly of Rhode Island went into effect with the first of this month. In substance this law provides for the compensation of injured employes by their employers, on a fixed scale, if both agree to the provisions of the law. Any employer or employe who does not accept the provisions of the law has the same rights at law that he recently enjoyed. Rhode Island's law, which was introduced by Senator R. Livingston Beeckman, of Newport, who is a director of the International Silver Company, contains many features regarded as distinctly superior to other laws on the same subject. This law does not create a cumbersome commission, as has been done in other States, but carries the matter directly to the Superior Court with the injunction to "summarily" decide the merits of the controversy. Appeals to the Supreme Court are allowed only upon points of law and equity, but the Superior Court is empowered to determine facts, which shall be conclusive. In the Rhode Island law the employer and employe are put upon an exactly equal footing, and this point is considered one of the strongest features of the measure. The Workmen's Compensation Act is not a compulsory measure in any sense, and it applies only to employers who state in writing that they agree to it, and those employed by such employers unless the latter state in writing that they do not agree to it. The principal basic intent of the law is to provide a way to compensate employes injured in their duties, for all causes except wilful injuries, at equitable rate, without the necessity of long and expensive court proceedings. Compensation for death from injury is included in the provisions. An employer who accepts the provisions of the law thereby waives certain specific claims of defense known in common law, and any and all employes of such employer who do not in writing refuse to accept the act, shall be held to have waived their common law rights to bring action for damages for personal injuries. The Commissioner of Industrial Statistics is made the State official, with whom notices of acceptance or rejection must be filed, and the act provides in detail how these shall be filed and what information shall be contained therein. Notices of injury must also be filed with this same official.

The Pawtucket Board of Trade has recently received an inquiry from the Peerless Insulated Wire and Cable Company, 18 Broadway, New York, which is in search of a site for a new

plant. The company requires a building that is at least 10,000 square feet of floor space. Olin S. Proctor, 150 Nassau street, New York, desires a location for a foundry and machine shop to employ 150 men. The wire factory of the National India Rubber Company at Bristol, which is increasing its output on insulated wires, and which has recently begun the manufacture of copper wire on a large scale in a new building that has been erected on Wood street in that town, is running on a day and night schedule. Frederick L. Dunbar has charge of the work in the wire department, and Lebarron C. Colt, who designed the new plant, has full charge of the new works of drawing copper wire.

With the rush season for fall and holiday deliveries at hand the manufacturing jewelers are confronted with a condition that works a hardship upon them as well as upon their employes. This is the unreasonable and impracticable labor restrictions that are provided for in a labor measure that was enacted by the last General Assembly at the behest of the labor organizations. The statute is all very well for the protection of mill help, but is utterly impracticable and discrimatory in the case of the employes in jewelry factories. Being an industry dependent upon the caprices of fashion as well as upon the prosperity of the country it is not more possible to regulate and control than to sweep back the rising of tide with a whisk broom. It is simply a case that when people want an article of jewelry, they want it, and they want what they want. Many a manufacturer has been shaken by manufacturing a big stock of a certain line in anticipation of a good demand only to find the whim of the people to have deserted that particular line which, in consequence has become a heavy loss. The provisions of the new law limit the hours of labor for females, of whom a large number is employed in the manufacturing jewelry establishments, to not more than ten in any twenty-four hours, and none shall be employed after 8 o'clock in the evening. Several prosecutions have been made, two being manufacturing jewelers.—W. H. M.

BRIDGEPORT, CONN.

OCTOBER 1, 1912.

Business in this city in all lines continues to be in a very good condition, and the outlook for the immediate future tends to show that it will remain so, the proximity of the presidential election apparently having little or no effect on the volume of orders being received. It is reported that A. F. Bennett, until two years ago secretary of the Crane Company, Chicago, but of late not actively connected with the Crane interests, has been appointed vice-president and general manager of the Crane Valve Company of this city, to succeed F. J. Mulcahy whose death occurred the latter part of August.

The Lake Torpedo Boat Company, builders of submarine boats, are reported considering the extension of their present plant. This company has been very successful in building submarines, not only for this country but for foreign countries as well. They are at present preparing to bid on three new boats for the United States Government. The Bridgeport Die and Machine Company has filed a certificate of organization with a capital of $1,500.

During the past year the value of new factory buildings and factory additions erected in Bridgeport amounted to over a half million dollars. The enrollments in the State Trade School for the present session have been very heavy. About 24 applied to enter the patternmaking class; 60 in the engineering class; 92 in the machinists class; 63 in the class of mechanical drawing. These, together with the applications received for the other classes brought the total enrollment up to about 325.—F. A. B.

NEWARK, N. J.

OCTOBER 1, 1912.

Conditions in the various trades seem to be showing an improvement, which is affecting favorably the manufacturing jewelry, silversmith and metal working trades. There is a better demand for goods, and buyers are taking hold. These buyers, however, are not from the East, which is still quiet, although improving some, but the largely improved conditions are from the West and South.

The tangled political conditions have helped to keep business back during the past few years. The present political compaign will be a strenuous one, but the people have faith in their leaders, that nothing will be done, whoever is elected, that will act as a disturbing influence on business. Generally the business interests stand pat on the fact that they will not favor any radical tariff reductions, except on the necessities of life. There is a high tariff on jewelry, still an enormous amount of cheap goods is brought in the country, and many jewelers even favor the tariff higher, certainly not a bit lower. In some lines it is almost impossible now to compete with manufacturers in France and Germany. The business of this country has been built up on the protective tariff basis and the people are not in favor of any radical change that will upset business and close up the factories. In the cheap metal lines, articles made of brass, bronze, aluminum, etc., are imported in this country at such low prices that the manufacturer in Newark cannot compete. Yet the facilities of Newark are better than those of any other American city to compete in these lines.

The Nassau Lighter Company, of 114 East Twenty-third street, New York City, have opened a factory here in the Rosenbaum building, Brook and Astor streets, to make a line of 14 and 18-karat gold, sterling and German silver pocket lighters and other novelties. A full complement of machinery has been installed. Maurice E. Bandler and G. L. Hess have charge of the New York end, and George H. Greenhalgh is superintendent of the factory. Arthur Bandler is in Paris much of the time looking for new ideas.

Turton Brothers, proprietors of the Leedin Novelty Company, making silver-plated toilet goods and mesh bags, have changed the name to the Leedin Silver Company.

The Ledos Manufacturing Company, making watch case materials, have built a two-story addition to their factory at 34 Pearl street and will increase their output.

Charles A. Becker & Co., making gold chains, have enlarged their factory at 443 South Tenth street. Considerable new machinery has been installed to make gold rope chain. Over thirty new machines have been added, some of them having a capacity of automatically turning out 150 feet a day, while before this was done by hand.

A fire did some damage to the jewel department of the American Oil & Supply Company, at 46 Green street. Elmer Meeker's brush factory was entirely burned out, but he has established his factory next door. He makes steel and brass wire scratch and bristle brushes for the manufacturing jewelry, silversmiths and metal working trades.

George Crossman & Company has started making composition and celluloid novelties and buttons at 273 Broome street and has installed a full line of machinery.

George McAleer, polisher and gilder, of 355 Mulberry street, is busy and has put in more equipment. He has taken up the repair of mesh bags and is making gold and sterling silver cuff links and collar buttons.

The Edge Chain Company, a new concern, have moved from 93 Lafayette street to 393 Mulberry street, where a complete working factory has been established to make woven mesh gold chain. William S. Clark is president, Louis A. Kempf, secretary and treasurer, and George S. Overton superintendent.

A fire in the Harper's building did some damage to the plants of L. Fritsche & Company, the W. C. Edge Jewelry Company, the Riker Company, Theberath & Company, and Kent & Woodland. These firms are all in good working order again.

J. H. Williams & Company, of 150 Hamilton street, Brooklyn, manufacturers of drop forged hardware lines, have bought sixty acres of land at Buffalo, N. Y., and are building a $1,000,000 plant there. They will also put in a large polishing and plating equipment.

Louis V. Aronson, proprietor of the Art Metal Works, Newark, N. J., is a candidate on the Republican ticket for mayor of the city, and is making an active canvass.

J. Chein Company, making metal novelties, are erecting a new factory at 310 Passaic avenue, to be a three-story brick building, to cost $12,000.—H. S.

PHILADELPHIA, PA.

October 1, 1912.

There seems to be reports of general improvement in business conditions, which is probably reflected through the reports of heavy business through the West and excellent in the South. This wave of prosperity has not struck the East so forcibly, but there is, however, more activity. There is more of a disposition among all trades to try, although the purchases are still cautiously made. There is a feeling that business is picking up which is giving more confidence in the trade.

The Samson street jewelry center is going to be greatly improved. New double arc lights have been placed on the street for two blocks and the street will be paved with wood blocks.

John J. Costello has taken over the business of M. Golden, manufacturer of jewelry, 714 Sansom street.

J. D. Ewing, who was for thirty-three years with the Keystone Watch Case Company as assistant superintendent, has started in business as the J. D. Ewing Company, to manufacture jewelry at 122 South Eighth street.

William Eckenbrino has moved his watch-making establishment from 44 North Eleventh street, to rear of 813 Chestnut street.

Miss K. Schmidt, late with Sellers & Co., of this city, has opened a shop to make pearl jewelry in the Bechtel building, Sansom street, Philadelphia, and 325 Walnut street, Camden, N. J.

The J. A. Pauly Company, silversmiths, is a new firm to start in business at 228 West Fayette street, Baltimore, Md., and are putting out a line of hollow ware and novelties.

The Hoover & Smith Company made over 600 trophy cups and sixty watches for the University of Pennsylvania, as prizes for the annual relay races. The cups were valued at $7,000.

The Bailey, Banks & Biddle Company made a chest of silver, which was presented to Harry Davis, formerly with the Philadelphia Athletics Baseball Club.

J. E. Caldwell & Company made a beautiful bronze fountain for the Mount Vernon Chapter of the Daughters of the American Revolution, Alexandria, Va. The central shaft of the fountain is one of the iron cannon used by General Braddock more than 150 years ago. The superstructure is of bronze, with five bowls. It is seven feet high, exclusive of the granite bases.

Henry Castellberg, of Baltimore, Md., has enlarged his manufacturing jewelry plant and is making a specialty of 14, 18 and 22 karat gold cushion edge wedding rings.

Joseph Fisher, a diamond importer of 722 Sansom street, has opened a New York office at 49 Maiden Lane, New York City, under the management of William Fisher.

It is reported that valuable platinum deposits were located on the 800-acre farm of Wells H. Bates, 5226 Parkside avenue and was assayed by Jacob H. Hand, said to contain platinum, iridium, rhodium, ruthenium, osmium and palladium. The farm is located in the Grand Canyon, Cal. Mrs. Hand discovered means for separating and recovering the metal.

Jules Duplain, watch case maker of Baltimore, Md., is talking of locating a factory at Norfolk, Richmond or Newport News, Va.

Mushlin & Schweiger have rebuilt and enlarged this manufacturing jewelry plant at 721 Sansom street.

M. E. Harmstead has opened a jewelry repair shop for the trade at 729 Sansom street.

Philip Schlarb, manufacturing jeweler of 17 Clay street, Baltimore, made a fine diamond jewel charm for the National German-American Alliance.

The Heer-Scofield Company, silversmiths of Baltimore, Md., made 900 snuff boxes for R. Harris & Company. of Washington, D. C., for the Dolly Madison breakfast given in the latter city. Also made 10,000 replicas of the Columbus monument of Washington, cups for the Washington Horse Show and the Pimlico cups. They made a beautiful and expensive cup for the Thames yacht races, London, England.

The Art Brass Manufacturing Company, of Pittsburgh, have put in operation at McKees Rocks their new plant to manufacture brass stampings, burnings, a complete line of gas and electric fixtures and cut brass specialties, brass, steel, aluminum and enameled sheets. Lawrence M. Fluhart is president; Scott Hayes, vice-president; Livingston R. Jaffords, treasurer; John A. Irwin, secretary; Earl B. Hennecke, general sales manager.

C. R. Rogers & Company, of Corry, Pa., engineers and contractors, furnished the plans for the new plant of the Kurtz Brass Bed Company of that city. The new building has concrete floors, brick walls, timber roof, will have a much larger capacity and has put in a new Ajax gas engine.

The Waynesboro (Pa.) Metal & Foundry Company, have incorporated to manufacture brass castings, with a capital stock of $50,000. The incorporators are F. D. Miller, C. U. Moore, George H. Armacast, John C. Benedict, of Westminster, Md., and George B. Beaver, of Waynesboro.

The Best Manufacturing Company, of Pittsburgh, making valve fittings, have appointed as their Philadelphia representative, Charles E. Hague, with office at 1510 Land Title building. He will have charge of sales in Eastern Pennsylvania, Baltimore and Washington. C. L. Stickney & Company have been appointed as their Washington and Oregon representatives, with offices at 108 White building, Seattle, Wash.—H. S.

COLUMBUS, OHIO

October 1, 1912.

Business on the whole is very active in this territory and the volume of business is ahead of that of the previous month. There is an exceptional good demand from foundries in the immediate vicinity of Columbus, and prices are rising rapidly in sympathy with the quotations in the eastern markets. Brass, tin, copper and aluminum are all up, and there is a good demand. Tin is quoted at about 52 cents per pound here, while lake copper is firm around 17½ cents. Brass is up also. Scrap metals are moving well and medium red brass scraps are sold at 13 cents, and No. 1 at 14 to 14½ cents. Scrap copper is quoted at between 15¾ and 16½ cents per pound. Automobile manufacturing is going on fast in all parts of the Buckeye State, and this affords quite a market for metals generally. Hardware manufacturing concerns are doing a larger business, and the same is true of concerns manufacturing plumbing and gas fitting supplies. The outlook is considered bright in every respect, and collections have improved materially.—J. W. L.

DETROIT, MICH.

October 1, 1912.

The Foundrymen's convention, held in Buffalo the closing week of September, was attended by many persons from Detroit, who return home enthusiastic for the future outlook of the metal industry. The conditions in this city the last four weeks have been good, and the outlook apparently is encouraging to every manufacturer. One disagreeable feature that mars the future business prospects here is the car shortage that has prevailed more or less regularly all through the year. There still are a few weeks more of lake navigation in sight, but when that is closed the press for transportation facilities will be seriously felt. No one knows what the results will be this winter. The coal situation also is causing some concern, and with the scarcity of this product, with the inability to obtain cars for shipments, is causing more or less uneasiness on the part of manufacturers. The railroads entering the city have for months been busy improving terminal facilities and planning for others which, it is hoped in a few months, will dispell all anxiety regarding transportation. The Wabash railroad especially is making strenuous efforts to improve its conditions. The other roads are also doing their best, and hope in time to be able to handle freely all the great amount of business that is being pressed on them.

It is needless at this time to discuss the automobile business. This line, and the associated concerns, which of course include the brass and aluminum industry, is still jumping ahead with leaps and bounds. Every plant in the city is rushing its output. It is apparent there will be no let up, and that the business will continue at high-water mark through until the opening of next season. The future of the automobile business in Detroit apparently has no limit. All the regular brass and aluminum plants that engage in other lines of manufacture are working full handed and have every prospect of a profitable fall and winter. The wholesale and manufacturing jewelers also are busy at this time in anticipation of the heavy trade that appears in early December, and extending through the holidays.—F. J. H.

TRADE NEWS

TRADE NEWS OF INTEREST DESIRED FROM ALL OF OUR READERS. ADDRESS THE METAL INDUSTRY, 99 JOHN STREET, NEW YORK

ADDITIONAL TRADE NEWS WILL BE FOUND UNDER "CORRESPONDENCE."

The Egry Register Company, manufacturers of autographic registers, Cincinnati, Ohio, will erect an addition to its plant.

It is reported in the current trade press that The Atlas Brass Works, makers of brass castings, Cleveland, Ohio, will erect an addition to its factory.

It is reported that the Hagerstown Metal & Refining Company, Hagerstown, Md., have erected a new factory for the purpose of manufacturing brass goods.

The Automatic Buffing machine Company, Buffalo, N. Y., recently equipped the Aldrich Manufacturing Company, of the same city, with six of their style "B" and one style "K" automatic buffing machines.

The W. H. Tyler Wire Company, manufacturers of bronze wire and fixtures, Cleveland, Ohio, is erecting an addition to its plant on East Thirty-fifth street, to take care of their rapidly-growing business.

The Premier Aluminum Foundry Company, Cleveland, Ohio, has been incorporated with a capital of $10,000 to manufacture aluminum castings and parts for vacuum cleaners. They report that their foundry is now operating in full blast.

J. H. Gautier & Company, manufacturers of black lead crucibles, retorts and specialties, Jersey City, N. J., have made arrangements with K. C. Schmidt & Company, of San Francisco, Cal., to handle their products on the Pacific coast.

The Ideal Furnace Company, Chester, Pa., sold the Ideal Coke Fired Furnace which they had on exhibition at the Buffalo convention to the Black Rock Manufacturing Company, Buffalo, N. Y. This latter company also contracted with H. S. Yerger of the Ross-Tacony Crucible Company, Philadelphia, Pa., for half a carload of crucibles.

The Eugene Dietzgen Company, manufacturers of scientific and surveying instruments, Chicago, Illinois, have awarded the contract for an addition to their brass foundry, 35 by 50 feet. This concern was incorporated in 1906 with a capital stock of $200,000. The officers are: Eugene Dietzgen, president; W. E. Cook, secretary; W. Bierbauer, treasurer.

The directors of the International Nickel Company, New York, have declared a dividend of 2 per cent. on the common stock of the new company. A quarterly dividend of 1½ per cent. was also declared on the preferred stock. The earnings of the company for the first five months of the present fiscal year are slightly better than for the same period of last year, and the outlook for the future is very promising.

The Cleveland Blow Pipe & Manufacturing Company, Cleveland, Ohio, announce that they have just received a contract from the Standard Steel Tube Company, Toledo, Ohio, to equip their polishing department, which operates twenty-eight polishing wheels, with a complete dust collecting system. Another contract recently awarded to this firm includes a dust collecting system for twelve polishing wheels for the Buffalo Dental Manufacturing Company, Buffalo, N. Y.

The Prest-O-Lite Company, Indianapolis, Ind., for their new plant now building, have placed contract with Rockwell Furnace Company of New York for a complete installation of oil fired furnaces and ovens. The furnaces are the Rockwell overfired accurate temperature type and will be used for heat treatment. The ovens, car type, will be used for baking asbestos disks. The installation, a large one, will have a capacity of heat treating twelve hundred tanks a day.

The New Departure Manufacturing Company, Bristol, Conn., are erecting a new three-story fireproof steel building, 62 x 215 feet, which will be occupied for office, show room, stock and shipping purposes only. The space now devoted to these purposes in other parts of the plant will be transformed into manufacturing space. A new hardening shop, 100 feet square, one story, is also being erected. These improvements will add about 80,000 square feet of floor space to the manufacturing capacity of the company.

The Glauber Brass Company, manufacturers of brass faucets, cocks, etc., Cleveland, Ohio, are going to build and equip an addition to their plant to take care of increased business, which has come mainly through their Eastern office, 44 East Twenty-third street, New York. To take care of the demand for their goods on the Pacific coast, they have established a branch office and warehouse at 1107 Mission street, San Francisco, Cal. They state that they have recently patented and placed on the market many ingenious inventions.

The Keyless Lock Company, Indianapolis, Ind., report, through F. A. Durnell, that they are planning the erection of a two-story fireproof factory to cost $75,000. All of the machinery in the new foundry, including oil furnaces for melting brass and aluminum, and gas ovens, will be strictly modern, and the company expect to be able to turn out about 20,000 pounds of castings per day. At present they have a fully equipped machine shop, also an up-to-date polishing and plating department, and are turning out all kinds of automobile parts.

The Erie Specialty Company, Erie, Pa., through their treasurer, C. L. Walker, announce that they will build an addition to their aluminum and brass foundry, giving them a floor space of 40 by 160 feet and bringing their capacity up to twenty-five molders. They are now buying equipment for this plant which will be modern in every respect both as to equipment and methods. The company makes a specialty of high grade castings and announce that they will continue to guarantee the quality of their products and the excellence of their service the same as in the past. In addition to operating a brass and aluminum foundry they have also a complete machine shop and large polishing and nickel plating departments.

Proposals will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until 10 o'clock a. m., September 24, and publicly opened immediately thereafter to furnish at the Navy Yard, Brooklyn, N. Y., a quantity of naval supplies, as follows: Sch. 4865, brass signal lanterns, brass hinges, cast brass and bronze hinges. Sch. 4867, manganese bronze in ingots, extruded brass shapes. At the Navy Yard, Boston, Mass.: Sch. 4865, seamless brass tubing; Sch. 4867, extruded brass shapes. At the Navy Yard, Norfolk, Virginia: Sch. 4864, medium bronze angles, bronze rod rivet. At Eastern Navy Yard. Sch. 4866, brass cocks, brass and copper pipe. Sch. 4876, naval brass, rod and bar; rolled brass sheet, copper, rod, bar and bolt; cold rolled sheet copper. At Western Navy Yard, Sch. 4864, hot rolled copper sheathing; Sch. 4866, brass and copper pipe. Sch. 4867, sheet brass, naval brass rod, sheet copper, hard and soft. At the Navy Yard, Mare Island, Cal., Sch. 4864: Bronze, copper sheathing.—Sch. 4866: Brass and copper pipe and fittings, etc. Sch. 4867: Phosphor-bronze, rod and sheet brass, etc., sheet and bar copper. Applications for proposals should designate the schedules desired by number. Blank proposals will be furnished upon application to the navy pay office nearest each yard, or to the bureau.

T. J. Cowie, Paymaster-General, U. S. N.

FOREIGN TRADE OPPORTUNITIES

[In applying for addresses at Bureau of Foreign and Domestic Commerce, Washington, D. C., refer to file number.]

No. 9606. Copper Tubes and Pipes and Brass Pipes.—A foreign trade journal recently published a request for the names of makers of solid-drawn tubes and pipes and brass tubes. The name of the firm making the request, which has offices throughout the world, was forwarded by an American consul.

No. 9644. Aluminum Sheets.—A European business man, who appears to be doing an active business, informs an American consular officer that he has ample opportunity to export aluminum sheets direct from the United States to the Far East, and he would like to hear from the manufacturers who are able to supply quantities of this material.

REMOVALS

Thomas McGrath, manufacturer of plated rings, Providence, R. I., has removed from 9 Calendar street to 3 Brayton avenue, where he has a shop 90 by 40 feet, which is lighted on four sides and equipped with electricity. Mr. McGrath was recently the recipient of a set of office furniture from his employees as an appreciation of the many kindnesses he has shown them.

CHANGE IN FIRM

The Western Brass and Plating Works, San Francisco, Cal., have changed their name to the Western Brass Manufacturing Company, and are adding considerable new machinery in order to handle a much larger volume of business. They state, through W. P. Collins, manager, that they have quite a number of inquiries for finished brass tubing, and as they operate an efficient finishing plant, would like to secure the agency of some good rolling mill.

The Paige Retort & Crucible Company, Taunton, Mass., has passed out of existence, and a new company has been formed in its place to be known as The Bay State Crucible Company. Jonathan Bartley has been elected president of the new company and $25,000 has been added to its capital stock and orders for additions to the machinery have been placed with the idea of making this plant one of the most up-to-date in the world. Mr. Bartley has had a great many years of experience in the crucible line, having been superintendent for a number of years in the Joseph Dixon Company, in Jersey City, and later building up the new concern at Trenton, N. J., which bears his name so that he needs no introduction to the trade.

He now occupies a very unique position, that of being a very heavy stockholder and director in the Trenton concern, and also a stockholder, director, and president of the new concern. The other directors of the new concern are Willis K. Hodgman, Franklin D. Williams, and James H. Westgate.

BUSINESS TROUBLES

Edwin L. King, secretary of the Pratt & Cady Company, brass founders and valve manufacturers, Hartford, Conn., has been appointed receiver for the company with instructions to continue the business for four months. The total indebtedness of the company is stated to be about $450,000.

INCREASE OF CAPITAL STOCK

The Union Brass Works, Detroit, Mich., have increased their capital stock from $30,000 to $70,000.

The Forbes Brass Company, Rochester, N. Y., have increased their capital stock from $10,000 to $20,000.

INCORPORATIONS

Business organizations incorporated recently. In addressing them it is advisable to include also the names of the incorporators and their residence. Particulars of additional incorporations may frequently be found in the "Correspondence" columns.

Stanley Bronze Company, Bridgeport, Conn. Capital, $100,000. Incorporators: Paul L. Miller, Charles E. Williamson and Edith S. Youngs, all of Bridgeport.

The Regle Brass Company, Marysville, Ohio. Capital stock, $75,000. Incorporators: J. B. Couture, W. M. Otto, P. W. Galloway, W. P. O'Brien and Charles Braun, all of Marysville.

United States Plating Company, New York. Capital, $30,000. To carry on a plating business. Incorporators: S. L. Glenn, W. E. Kelley and V. E. Strickland, all of New York.

The Bennett-Maravin Silver Company, New Milford, Conn. Capital, $100,000. To manufacture silverware. Incorporators: M. G. Merwin, V. P. Staut and E. J. Emmons, all of New Milford.

The Bay State Silver Company, Taunton, Mass. Capital, $35,000. To manufacture silverware. Directors: Charles Fisher, Robert G. Bennett and Thomas P. Carroll, all of Taunton.

New York Modern Brass Works, Inc., New York. Capital, $40,000. To carry on a general metal business. Incorporators: I. Rossberg and B. Simon, of New York, and K. Luria, of Ansonia, Conn.

The Southern Aluminum Company, New York. Capital, $6,400,000. To deal in aluminum and similar products. Incorporators: Paul Heroult, Theodore Sternfeld and Carl M. Loel, all of New York.

The H. S. Metal Specialty Company, Cleveland, Ohio. Capital, $10,000. To manufacture metal novelties and specialties. Incorporators: F. T. Cullitan, E. Sanderson, W. G. Stuber, G. Hagenbuch and A. B. Bardell, all of Cleveland.

The White Iron Works Company, Cleveland, Ohio. Capital, $15,000. To manufacture structural and ornamental iron and brass work. Incorporators: C. S. White, C. M. White, J. K. Lee, A. H. Monnich and Robert Grosser, all of Cleveland.

PRINTED MATTER

Polishing Machinery.—The Backus & Leeser Company, platers' and polishers' supplies, New York, have issued a Machinery Bulletin of thirty-two pages, illustrating and describing the polishing and buffing lathes, countershafts, grinders, tumbling barrels, sand blast apparatus, etc., handled by them. Copies upon application.

Brass Goods.—The Imperial Brass Manufacturing Company, brass specialists, Chicago, Ill., have recently sent out Posters A and B, describing and illustrating their screw machine work, floats, strainers, water tubes and hub caps. Other posters descriptive of different products of this concern will be issued from time to time.

Hydraulic Accumulators is the title of Catalogue No. 84, just issued by the Watson-Stillman Company, New York, illustrating, tabulating and fully explaining the seven principal types of accumulators which they manufacture.

A few pages are devoted to accumulator accessories and to special hydraulic testing apparatus, reservoirs, etc. A copy may be obtained by addressing the above company.

Hamilton, the manufacturing centre of Canada, has certainly surpassed itself in the very excellent booklet just received. Both

pictorically and artistically it reaches a very high degree of merit, and the facilities enjoyed by this thriving city are brought home to the reader in terse and telling language. An excellent map accompanies the booklet. A copy may be had by applying to H. M. Marsh, Commissioner of Industries, Hamilton, Ontario.

Electric Machinery: A very complete and comprehensive catalog has just been issued by the Crocker-Wheeler Company of Ampere, N. J., giving full account of Ampere, the home of the company. The booklet contains handsome photo-engravings of the officers of the company, Messrs. Crocker and Wheeler, with a short biographical notice of each, and is also further embellished with views of the town and works of the company.

Copper.—C. G. Hussey & Company, the Pittsburgh Copper & Brass Rolling Mills, Pittsburgh, Pa., are remembering their friends through the medium of a 15-inch copper ruler, sent out some time ago. One edge of this ruler is sub-divided into eighths of an inch, while the other measures thirty seconds. The face contains the name and address of the company and enumerates their products, which include sheet copper, copper nails, bottoms, rivets, gaskets and ferrules, and copper eaves trough pipe.

Mining Laws.—A very interesting book has just been published under the auspices of the Pan-American Union with the title of "The Mining Laws of the Republic of Colombia." The work has been translated into English and has an introduction by Phanor J. Eder, of the New York bar. The volume consists of 150 pages and index and is particularly valuable to those interested in mining projects in Colombia at the present time in view of the growing importance of Colombia as a mining country and the daily increase of English and American capital invested in its mines.

Ros-Core: The J. W. Paxson Company, Philadelphia, Pa., distributed at the Buffalo Exhibition a large and handsome folder which is devoted to the superior qualities claimed for Ros-Core, which is a liquid chemically prepared, for the making of large cores. Another compound handled by the same people is known as Pax-Oil which is said to possess all of the advantages of rosin and the economies of core oils with the additional recommendation that it will prevent absorption of moisture. Samples of these compounds and also of their applications were on exhibition at the Paxson booth.

Sand Blast Machinery: Bulletin No. 28 recently issued by the J. W. Paxon Company, Philadelphia, Pa., gives complete descriptions and illustrations of the list of sand blast machinery known as Paxson-Warren. Included in this line are all kinds of rubber goods in the form of clothing and other articles for the protection of the workman in handling sand blasts. Other products of this company are portable sand screens, hand cleaning machines, revolving screens, sand blast tumbling barrels and exhaust systems, together with various types of air compressors. The bulletin will be mailed upon request.

Jolt Ramming Machines.—The Vulcan Engineering Sales Company, New York and Chicago, controlling the entire product and sales of the Hanna Engineering Works, Mumford Molding Machine Company and the Q. M. S. Company, have sent out a bulletin in which they describe the distinctive and essential features of the Mumford jolt rammers. They claim that this machine saves from one-third to three-fourths of molding cost by obviating all hand ramming labor, strained castings and wasted metal, losses from "blow" and "Scab," filling and ramming molds by layers, and produces smoother and cleaner castings without overweight. Copies of the bulletin may be obtained upon request.

CATALOG EXHIBIT

An exhibition of every kind of catalog may be seen at The Metal Industry office, 99 John street, New York. The Metal Industry is prepared to do all of the work necessary for the making of catalogs, pamphlets, circulars and other printed matter. Estimates will be furnished for writing descriptions, making engravings, printing, binding, for the entire job from beginning to end or any part of it.

ADNEWS

The Osborn Manufacturing Company, Cleveland, O., in their advertisement this month bring out some of the principal features of their polishing lathes and wire wheel brushes.

The Carborundum Company, Niagara Falls, N. Y., show in their advertisement what a large quantity of work can be ground in a day by one man using Carborundum grinding wheels.

The Newport Sand Bank Company, Newport, Ky., call attention to their high grade moulding sand. This company has been producing and shipping since 1880. They offer to send samples on request.

The Arcade Manufacturing Company, Freeport, Ill., call attention to their moulding machines in this issue. They will be glad to send full information regarding the types best suited to brass and aluminum work.

The Berkshire Manufacturing Company, Cleveland, O., are advertising their squeezers and moulding machines, several types of which are particularly adapted for brass foundry work. They invite correspondence from interested foundrymen.

Logemann Brothers Company, Milwaukee, Wis., advertise their cabbaging press for bundling scrap metals. This machine is used by many smelters and foundries to prepare scrap for the crucible, and is reported to give the best of satisfaction.

The A. G. Kaufman Manufacturing Company, 83 Reade street, New York, advertise their kick valve for use with blow pipes, etc. This is a very handy little device which saves a lot of time and a great deal of gas, as it regulates the flow of air and gas, and stops it altogether when the blow pipe is not in use.

Fitz, Dana & Company, 110 North street, Boston, Mass., one of the old reliable metal houses of the country, invite correspondence from users of metals of all kinds, including tin, copper, spelter, lead, antimony, aluminum, babbitt metal, etc. Their New York house is Fitz, Dana & Brown, 440 Pearl street, New York.

The Roessler & Hasslacher Chemical Company, 100 William street, New York, give the names of about forty prominent manufacturers of metal goods of many kinds to whom they refer as users of Trisalyt, the new metallic salt for electro-plating in brass, copper, bronze, zinc, gold and silver. Their booklet "B" gives full information regarding Trisalyt.

Adolf Neubeck, 126 Fifth avenue, New York, makes an announcement in this issue regarding several new preparations for nickel plating which were developed by Dr. Friedrich Neubeck, of Schwanheim am Main, Germany. These preparations have met with great success in Europe, and are now being introduced into this country. One of them, Prometheus Rapid Nickel Salts, it is claimed, will plate on iron, steel or any other metal in less than one-third the usual time required. Another salt is Konstantia, a special nickel preparation for manufacturers of cutlery, surgical instruments and Brittania ware. The third is Vulcan, a special barrel salt for nickel plating in mechanical plating barrels. Letters are printed in the advertisement from prominent concerns which indorse these products.

INQUIRIES AND OPPORTUNITIES

Under our directory of "Trade Wants" (published each month in the rear advertising pages), will be found a number of inquiries and opportunities which, if followed up, are a means of securing business. Our "Trade Want Directory" fills wants of all kinds, assists in the buying and selling of metals, machinery, foundry and platers' supplies, procures positions and secures capable assistants. See Want Ad. pages.

METAL MARKET REVIEW

NEW YORK, October 7, 1912.

COPPER.

The most notable event in connection with the future of the copper market is the establishment today on a commercial basis of the Edison Storage Battery cars. A train of these cars was run lately from the Pennsylvania terminus to Long Beach, and we are told the total cost for power for driving these cars was less than the maintenance of the overhead trolley and the rail bonding. This means that eventually these storage battery cars will most assuredly displace the trolley, and the effect on the future of copper is going to be felt some day. We referred to the storage battery car in our report of February, 1910. The first car was then on the market.

The copper market during the month has held very firm at 17¾ for Lake and Electrolytic, and around 17⅝ for Casting. Home consumers had to come in and buy at full prices, and possibly 70,000,000 pounds have been contracted for, while the exports, according to the Custom House returns, have not been very heavy, about 56,000,000 pounds.

The market at present is entirely under control of the producers, and from the way the production during the year has been systematically restricted it is more than likely that the present working arrangement among the big producers will result in holding prices around present level and keeping production down as close as possible to the consuming demand. We know now that refineries can turn out 147,000,000 a month or more right along.

Wall Street papers reported a sale of Lake at 18.10. This was rather more than the trade papers could swallow, and so Wall Street tried to explain, but even then the trade papers could not get it down, and it is still undigested, if not unsold.

TIN.

The much-heralded bull syndicate seem to have secured a good grip on the London tin market, and prices were boosted up from 47½ cents around the beginning of September to 51½ at the close, a nice 4 cents a pound advance for the American consumer to pay, and worse yet to come. Fifty-five cents is predicted for October. It looks quite possible; who ever heard of 50-cent Tin for a steady diet, and now it is over 51 cents, and we are still consuming it and have to buy and also pay for it. The higher price does not seem to bring out any more tin, nor does it seem to restrict consumption. In America the deliveries into consumption for the nine months have been about 30,000 tons, against 25,000 tons for the same period last year. The shipments from the Straits for the same period were 28,000 tons, against 26,000 tons; even so, that is no excuse for 55 or even 51-cent tin. The only real difference between speculating and gambling is that gambling is against the law, while speculating is not, but it is all gambling just the same.

Tin today is worth about 30 cents, only consumers have to pay about 51½; next month they say it is going to be 55 cents. Why? We give it up.

LEAD.

The Trust has held the price of lead at 5.10 New York, and talk is that this price may be raised whenever the producers need the money. There is a little lead to be picked up at about 5 points below the Trust prices, but at the moment this seems to have disappeared and the market is steady at 5.10 New York and 4.95 to 4.97½ East St. Louis.

SPELTER.

The speculative spelter interests are working hard on the New York Metal Exchange to boost up the price of spelter without having to take any metal. This does not have much effect on consumers because the legitimate spelter producers are taking care of their consuming trade at lower prices than made by speculators. The market is around 7.55 to 7.60 New York, and 7.40 East St. Louis.

ALUMINUM.

The market is firmer again at 24½ to 25.00 against 23½ a month ago. The home maker is pretty well sold up and foreign makers get about ¼ cent advance for quick deliveries.

ANTIMONY.

This market has been very active and prices have advanced nearly 1½ cents during the last few days. Cooksons is up to 10⅛, Halletts 9 to 9¼, and other grades close to 9 cents. The last active advance in antimony was on account of the Russo-Japanese war. Is it possible there is another war coming along. Germany seems to be itching for something.

SILVER.

The price of silver keeps up and the market holds very firm—63⅝ cents New York and 29⅜d. London.

QUICKSILVER.

Market has held steady with the wholesale price at $42, jobbing lots $42.50 to $53.

SHEET METAL.

Sheet copper is held at 23 cents base, with copper wire at 19 cents base. High sheet brass and all brass products were lately advanced 25 cents.

OLD METALS.

There has been a better demand for old metals. and a fair demand from Europe. Prices hold firm and a shade higher than a month ago.—J. J. A.

COPPER PRODUCTION

(Issued by the Copper Producers' Association.)
October 8, 1912.

		Pounds.
Stocks of marketable copper of all kinds on hand at all points in the United States, September 1, 1912		46,701,374
Production of marketable copper in the United States from all domestic and foreign sources during September, 1912		140,089,819
		186,791,193
Deliveries:		
For domestic consumption	63,460,810	
For export	60,264,796	
		123,725,606
Stocks of marketable copper of all kinds on hand at all points in the United States, October 1, 1912		63,065,587
Stocks increased during the month of September		16,364,213

SEPTEMBER MOVEMENTS IN METALS

	Highest.	Lowest.	Average.
COPPER.			
Lake	17.75	17.65	17.70
Electrolytic	17.75	17.60	17.65
Casting	17.60	17.35	17.50
TIN	51.10	47.25	49.20
LEAD	5.10	4.80	5.05
SPELTER	7.65	7.35	7.55
ANTIMONY (Hallett's)	9.25	7.75	8.35
SILVER	63¾	62½	63.08

WATERBURY AVERAGE

The average price of lake copper per pound as determined monthly at Waterbury, Conn.:

1911—Average for year 12¾. 1912—January, 14½; February, 14½; March, 15; April, 16; May, 16⅜; June, 17½; July, 17¾; August, 17¾; September 17⅞ cents.

DAILY METAL PRICES

We have made arrangements with the New York Metal Exchange by which we can furnish our readers with the Official Daily Market Report of the Exchange and a year's subscription to THE METAL INDUSTRY for the sum of $10. The price of the Report alone is $10. Sample copies furnished for the asking. We can furnish daily telegraphic reports of metal prices. Address THE METAL INDUSTRY, 99 John street, New York.

INFORMATION BUREAU

Any firm intending to buy metals, machinery or supplies, and desiring the names of the various manufacturers and sellers of these products can obtain the desired information by writing to THE METAL INDUSTRY, 99 John street, New York. Commercial questions are answered by return mail. Our Information Bureau is for the purpose of answering questions of all kinds.

Metal Prices, October 7, 1912

NEW METALS.

	Price per lb. Cents.
COPPER—PIG, BAR AND INGOT AND OLD COPPER. Duty Free, Manufactured 2½c. per lbs.	
Lake, carload lots	17.75
Electrolytic, carload lots	17.75
Casting, carload lots	17.65
TIN—Duty Free.	
Straits of Malacca, carload lots	51.50
LEAD—Duty Pig, Bars and Old, 2½c. per lb.; pipe and sheets, 2⅜c. per lb.	
Pig lead, carload lots	5.10
SPELTER—Duty 1⅜c. per lb. Sheets, 1⅝c. per lb.	
Western, carload lots	7.60
ALUMINUM—Duty Crude, 7c. per lb. Plates, sheets, bars and rods, 11c. per lb.	
Small lots	30.00
100 lb. lots	27.00
Ton lots	25.00
ANTIMONY—Duty 1½c. per lb.	
Cookson's cask lots, nominal	9.85
Hallett's cask lots	9.25
Chinese	9.25
Hungarian grade	9.00
NICKEL—Duty Ingot, 6c. per lb. Sheet, strip and wire 35 per cent. ad valorem.	
Shot, Plaquettes, Ingots, Blocks according to quantity	40 to .45
ELECTROLYTIC—3 cents per pound extra.	
MANGANESE METAL—Duty 20 per cent	.90
MAGNESIUM METAL—Duty 3 cents per pound and 25 per cent. ad valorem (100 lb. lots)	1.50
BISMUTH—Duty free	2.00
CADMIUM—Duty free	.90
CHROMIUM METAL—Duty 25 per cent. ad val	.98
QUICKSILVER—Duty 7c. per lb	.60
	Price per oz.
GOLD—Duty free	$20.67
PLATINUM—Duty free	45.50
SILVER—Duty free	.63⅝

OLD METALS.

Dealers' Buying Prices. Cents per lb.		Dealers' Selling Prices. Cents per lb.
15.50 to 16.00	Heavy Cut Copper	17.00 to 17.25
15.25 to 15.75	Copper Wire	16.50 to 16.75
13.75 to 14.00	Light Copper	14.75 to 15.00
12.50 to 12.75	Heavy Mach. Comp	14.00 to 14.50
9.50 to 9.75	Heavy Brass	10.75 to 11.00
7.50 to 7.75	Light Brass	8.75 to 9.00
9.00 to 9.25	No. 1 Yellow Brass Turnings	10.00 to 10.25
10.75 to 11.25	No. 1 Comp. Turnings	12.00 to 12.50
4.00 to ——	Heavy Lead	—— to 4.25
4.75 to ——	Zinc Scrap	—— to 5.25
6.00 to 6.50	Scrap Aluminum, turnings	9.00 to 12.00
10.00 to 12.00	Scrap Aluminum, cast, alloyed	15.00 to 17.00
14.00 to 15.00	Scrap Aluminum, sheet (new)	18.00 to 20.00
23.00 to 24.00	No. 1 Pewter	25.00 to 26.00
20.00 to 23.00	Old Nickel	23.00 to 26.00

INGOT METALS.

		Price per lb. Cents.
Silicon Copper, 10%	according to quantity	27 to 32
Silicon Copper, 20%	" "	30 to 32
Silicon Copper, 30% guaranteed	" "	32 to 34
Phosphor Copper, guaranteed 10%	" "	25 to 28
Phosphor Copper, guaranteed 15%	" "	27 to 30
Manganese Copper, 25%	" "	27 to 30
Phosphor Tin, guaranteed 5%	" "	58 to 61
Phosphor Tin, no guarantee	" "	53 to 55
Brass Ingot, Yellow	" "	12½ to 12⅞
Brass Ingot, Red	" "	14 to 16
Bronze Ingot	" "	15 to 15⅜
Manganese Bronze	" "	19½ to 21
Phosphor Bronze	" "	13 to 16
Casting Aluminum Alloys	" "	19¾ to 24¾
PHOSPHORUS—Duty 18c. per lb. According to quantity		30 to 35

PRICES OF SHEET COPPER.

BASE PRICE, 28 Cents per Lb. Net.

PRICES MENTIONED BELOW ARE FOR QUANTITIES OF 100 LBS. AND OVER.

SIZE OF SHEETS.		64 oz. and over 50 lb. sheet 30 x 60 and heavier.	32 oz. to 64 oz. 25 to 50 lbs. sheet 30 x 60.	24 oz. to 32 oz. 18¾ to 25 lb. sheet 30 x 60.	16 oz. to 24 oz. 12½ to 18¾ lb. sheet 30 x 60.	14 oz. and 15 oz. 11 to 12½ lb. sheet 30 x 60.	12 oz. and 13 oz. 9½ to 11 lb. sheet 30 x 60.	10 oz. and 11 oz. 7½ to 9½ lb. sheet 30 x 60.	8 oz. and 9 oz. 6¼ to 7⅞ lb. sheet 30 x 60.	Lighter than 8 oz.
		Cents Per Pound Over Base Price for Soft Copper								
Not wider than 30 ins.	Not longer than 72 inches.	Base	Base	Base	Base	1	2	3	6	9
	Longer than 72 inches. Not longer than 96 inches.	"	"	"	"	1	3	6	9	
	Longer than 96 inches.	"	"	"	"	2	6			
Wider than 30 ins. but not wider than 36 inches.	Not longer than 72 inches.	"	"	"	"	2	4	7	10	
	Longer than 72 inches. Not longer than 96 inches.	"	"	"	"	2	6	9		
	Longer than 96 inches. Not longer than 120 inches.	"	"	"	1	3				
	Longer than 120 inches.	"	"	1	2					
Wider than 36 ins. but not wider than 48 inches.	Not longer than 72 inches.	"	"	1	2	4	7	10		
	Longer than 72 inches. Not longer than 96 inches.	"	"	1	3	5	8			
	Longer than 96 inches. Not longer than 120 inches.	"	"	2	4	8				
	Longer than 120 inches.	"	1	3	6					
Wider than 48 ins. but not wider than 60 inches.	Not longer than 72 inches.	"	Base	1	3	6	11			
	Longer than 72 inches. Not longer than 96 inches.	"	"	2	4	9				
	Longer than 96 inches. Not longer than 120 inches.	"	1	3	6					
	Longer than 120 inches.	1	2	4	8					
Wider than 60 ins. but not wider than 72 ins.	Not longer than 96 inches.	Base	1	3	8					
	Longer than 96 inches. Not longer than 120 inches.	"	2	5	10					
	Longer than 120 inches.	1	3	8						
Wider than 72 ins. but not wider than 108 ins.	Not longer than 96 inches.	1	3	6						
	Longer than 96 inches. Not longer than 120 inches.	2	4	7						
	Longer than 120 inches.	3	5	9						
Wider than 108 ins.	Not longer than 132 inches.	4	6							
	Longer than 132 inches.	5	8							

The longest dimension in any sheet shall be considered at its length.

CIRCLES, SEGMENTS AND PATTERN SHEETS, advance over prices of Sheet Copper required to cut them from 3 cents per pound.

COLD OR HARD ROLLED COPPER, 14 oz. per square foot, and heavier, add 1 " " "

COLD OR HARD ROLLED COPPER, lighter than 14 oz., per square foot, add 2 " " "

POLISHED COPPER, 20 INCHES WIDE and under, advance over price for Cold Rolled Copper of corresponding dimensions and thickness 1 " " sq. ft.

POLISHED COPPER, WIDER THAN 20 INCHES, advance over price for Cold Rolled Copper of corresponding dimensions and thickness 2 " " " "

COLD ROLLED COPPER, PREPARED SUITABLE FOR POLISHING, same as Polished Copper of corresponding dimensions and thickness.

COLD ROLLED AND ANNEALED COPPER SHEETS OR CIRCLES, same price as Cold or Hard Rolled Copper of corresponding dimensions and thickness.

ROUND COPPER ROD, ¾ inch diameter or over ..... **Base Price.**

(Rectangular, Square and Irregular Shapes, Copper Rod, Special Prices.)

ZINC—Duty, sheet, 1⅝c. per lb.

	Cents per lb.
Carload lots, standard sizes and gauges, at mill	9 less 8%
Casks, jobbers' prices	9½
Open casks, jobbers' prices	10

Metal Prices, October 7, 1912

PRICES ON BRASS MATERIAL—MILL SHIPMENTS.

In effect October 1, 1912, and until further notice.

To customers who buy over 5,000 lbs. per year.

	Net base per lb. High Brass.	Low Brass.	Bronze.
Sheet	$0.17⅞	$0.19¼	$0.20⅞
Wire	.17⅛	.19¼	.20⅞
Rod	.17⅛	.20	.21⅞
Brazed tubing	.22	——	.25⅝
Open seam tubing	.20⅞	——	.23⅝
Angles and channels, plain	.21¼	——	.24⅛

50% discount from all extras as shown in American Brass Manufacturers' Price List No. 9.

NET EXTRAS FOR QUALITY.

Sheet—Extra spring drawing and spinning brass	½c.	per	lb.	net	advance
" —Best spring, drawing and spinning brass	1½c.	"	"	"	"
Wire—Extra spring and brazing wire	½c.	"	"	"	"
" —Best spring and brazing wire	1c.	"	"	"	"

To customers who buy 5,000 lbs. or less per year.

	Net base per lb. High Brass.	Low Brass.	Bronze.
Sheet	$0.18⅝	$0.20½	$0.22½
Wire	.18⅝	.20½	.22⅛
Rod	.18⅝	.21¼	.23⅛
Brazed tubing	.23¼	——	.26⅞
Open seam tubing	.22¼	——	.24⅞
Angles and channels, plain	.22½	——	.25⅜

Net extras as shown in American Brass Manufacturers' Price List No. 9.

NET EXTRAS FOR QUALITY.

Sheet—Extra spring drawing and spinning brass	½c.	per	lb.	net	advance
" —Best spring, drawing and spinning brass	1½c.	"	"	"	"
Wire—Extra spring and brazing wire	½c.	"	"	"	"
" —Best spring and brazing wire	1c.	"	"	"	"

BARE COPPER WIRE—CARLOAD LOTS.

19c. per lb. base.

SOLDERING COPPERS.

300 lbs. and over in one order	24c.	per lb. base
100 lbs. to 300 lbs. in one order	24½c.	" " "
Less than 100 lbs. in one order	26c.	" " "

PRICES FOR SEAMLESS BRASS TUBING.

From 1¼ to 3½ O. D. Nos. 4 to 13 Stubs' Gauge, 22c. per lb.
Seamless Copper Tubing, 26c. per lb.

For other sizes see Manufacturers' List.

PRICES FOR SEAMLESS BRASS TUBING Iron Pipe Sizes.

Iron pipe Size	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
Price per lb.	30	29	24	23	22	22	22	22	22	22	22	23	24	26	28	29

PRICE LIST OF IRON LINED TUBING—NOT POLISHED.

	Per 100 feet Brass.	Bronze.
⅜ inch	$8	$9
½ inch	8	9
⅝ inch	10	11
¾ inch	12	13
⅞ inch	14	15
1 inch	18	20
1¼ inch	22	24
1½ inch	25	27
1½ inch	32	35
1⅝ inch	45	48
2 inch	56	60

Discount 45 and 5%.

PRICE FOR TOBIN BRONZE AND MUNTZ METAL.

Tobin Bronze Rod	19c.	net base
Muntz or Yellow Metal Sheathing (14" x 48")	17½c.	" "
" " " Rectangular sheets other than Sheathing	20c.	" "
" " " Rod	17½c.	" "

Above are for 100 lbs. or more in one order.

PLATERS' METALS.

Platers' bar in the rough, 27⅝c. net.

German silver platers' bars dependent on the percentage of nickel, quantity and general character of the order.

Platers' metal, so called, is very thin metal not made by the larger mills and for which prices are quoted on application to the manufacturers.

PRICES FOR SHEET BLOCK TIN AND BRITANNIA METAL.

Not over 18 in. in width, not thinner than 28 B. S. Gauge, 2c. above price of pig tin in same quantity.

Not over 35 in. in width, not thinner than 22 B. S. Gauge, 3c. above price of pig tin.

PRICE SHEET FOR SHEET ALUMINUM—B. & S. Gauge.

Wider than..... and including.....	3in. 12in.	6in. 14in.	14in. 16in.	16in. 18in.	18in. 20in.	20in. 24in.	24in. 30in.	30in. 36in.	36in. 40in.
	in coils.								
No. 13 and heavier	34	34	36	36	36	36	39	39	39
" 14	34	34	36	36	36	36	39	39	39
" 15	34	34	36	36	36	36	39	39	39
" 16	34	34	36	36	36	36	39	39	39
" 17	34	34	36	36	36	36	39	39	39
" 18	34	34	36	36	36	36	39	39	42
" 19	34	34	36	36	36	36	39	40	43
" 20	34	36	36	36	36	38	41	42	44
" 21	34	38	38	38	38	40	43	44	50
" 22	34	38	38	38	40	40	43	47	51
" 23	34	38	38	38	40	40	43	49	52
" 24	34	38	40	42	42	42	45	51	54
" 25	36	39	41	43	43	43	46	53	57
" 26	36	39	42	46	46	46	51	55	61
" 27	36	40	44	48	48	49	54	58	64
" 28	36	40	46	48	49	49	56	62	67
" 29	38	41	48	50	52	52	61	67	72
" 30	38	42	50	52	56	62	69	72	77
" 31	43	47	55	58	63	71	74	77	83
" 32	45	49	57	61	69	77	91	90	95
" 33	47	51	60	65	73	84	91	100	110
" 34	50	55	62	70	78	91	103	110	120
" 35	..	65	70	80	90	100	115	125	..
" 36	..	80	90	100	115	120	135	..	..
" 37	..	104	114	129	144	159	174	..	..
" 38	..	124	139	154	169	184	204	..	..
" 39	..	144	164	184	204	224	..	..	..
" 40	..	174	204	224	244	..	..	..	..

In flat rolled sheets the above prices refer to lengths between 2 and 8 feet. Prices furnished by the manufacturers for wider and narrower sheet. All columns except the first refer to flat rolled sheet. Prices are 100 lbs. or more at one time. Less quantities 5c. lb. extra. Charges made for boxing.

PRICE LIST SEAMLESS ALUMINUM TUBING.

STUBS' GAUGE THE STANDARD. SIZES CARRIED IN STOCK.
Outside Diameters. BASE PRICE, 25 Cents per Pound.

Stubs' Gauge.	Inches.	¼ in.	5-16 in.	⅜ in.	½ in.	⅝ in.	¾ in.	⅞ in.	1 in.	1¼ in.	1½ in.	1¾ in.	2 ins.	2½ ins.	3 ins.	3½ ins.	4 ins.	4½ ins.
11.	.120.	..	..	..	..	..	..	..	27	24	..	..	14	20	10	9	16	23
12.	.109.	..	..	..	..	..	..	..	26	..	..	..	15	..	..	..	..	..
14.	.083.	..	..	..	..	..	..	..	..	..	..	..	17	..	..	..	..	..
16.	.065.	..	..	..	..	..	28	27	27	24	23	21	21	21	21	27	31	37
18.	.049.	..	..	..	..	33	30	29	28	25	26	26	26	..	..	..	..	..
20.	.035.	117	..	46	39	34	33	32	30	29	30	30	30	31	38	49	58	81
21.	.032.	..	..	..	40	..	..	..	..	..	..	..	..	..	..	..	..	..
22.	.028.	136	98	48	42	38	37	35	34	..	..	..	45	..	..	..	..	..
24.	.022.	188	133	108	88	79	73	62	60	66	..	..	..	..	..	..	..	..

Prices are for ten or more pounds at one time. For prices on sizes not carried in stock send for Manufacturers' List.

PRICE LIST FOR ALUMINUM ROD AND WIRE.

Diameter. B. & S. G'ge	000 to No. 10.	No. 11.	No. 12.	No. 13.	No. 14.	No. 15.	No. 16.	No. 17.	No. 18.	No. 19.	No. 20.	No. 21.	No. 22.
Price, per lb.	32	32½	32½	33	33½	34	34½	35	36	37	38	43	46

PRICE LIST FOR GERMAN SILVER IN SHEETS AND ROLLS.

Per cent.	Price per lb.	Per cent.	Price per lb.
12	$0.52	16	$0.58
13	.53	17	.59
14	.54	18	.60
15	.55		

These prices are for sheets and rolls over 2 inches in width, to and including 8 inches in width and to No. 20, inclusive. American or Brown & Sharpe's Gauge. Prices are for 100 lbs. or more of one size and gauge in one order. Discount 50%.

GERMAN SILVER TUBING.

4	per cent.	to	No. 19,	B. & S.	Gauge,	inclusive	$0.60
6	"	"	19,	"	"	"	.70
9	"	"	19,	"	"	"	.85
12	"	"	19,	"	"	"	1.00
15	"	"	19,	"	"	"	1.15
16	"	"	19,	"	"	"	1.20
18	"	"	19,	"	"	"	1.30

German Silver Tubing thinner than No. 19 B. & S. Gauge add same advances as for Brazed Brass Tube.

For cutting to special lengths add same advances as for Brazed Brass Tube. Discount 40%.

PRICES OF SHEET SILVER.

Rolled sterling silver .925 fine is sold according to gauge quantity and market conditions. No fixed quotations can be given, as prices range from 2c. below to 6c. above the price of bullion.

Rolled silver anodes .999 fine are quoted at 2c. to 3½c. above the price of bullion.